FN/3

NEWARK PUBLIC LIBRARY

MAY 20 1981

U. S. GOVT. PUBS.
DEPOSITORY 376

MENTAL HEALTH SERVICE SYSTEM REPORTS

SERIES FN:
Information Systems

U.S. DEPARTMENT OF
HEALTH, AND HUMAN SERVICES
Public Health Service
Alcohol, Drug Abuse, and
Mental Health Administration
National Institute of Mental Health

Series FN No. 3

# A Cost-Effectiveness Methodology for Community Mental Health Centers: Development and Pilot Test

HE 20.8110/2:

MENTAL HEALTH SERVICE SYSTEM REPORTS

# A Cost-Effectiveness Methodology for Community Mental Health Centers: Development and Pilot Test

Daniel B. Fishman, Ph.D.
Associate Professor and Director of Psychological Services
Graduate School of Applied and Professional Psychology
Rutgers -- the State University
Piscataway, New Jersey
Formerly:
Associate Director for Administration and Evaluation
Adams County Mental Health Center
Commerce City, Colorado

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Alcohol, Drug Abuse, and Mental Health Administration

National Institute of Mental Health
Division of Biometry and Epidemiology
5600 Fishers Lane
Rockville, Maryland 20857

best copy available

This publication was developed under contract number HSM-42-73-162(OP) from the National Institute of Mental Health. Henry Foley and Cecil Wurster served as NIMH project officers.

The material contained herein does not necessarily reflect the opinions, official policy, or position of the National Institute of Mental Health; Alcohol, Drug Abuse, and Mental Health Administration; Public Health Service; or the U.S. Department of Health and Human Services.

The National Institute of Mental Health has obtained permission from the copyright holders to reproduce certain materials, which appear on page 55. Further reproduction of these materials is prohibited without specific permission of the copyright holders. All other material contained in the manual, except quoted passages from copyrighted sources, is in the public domain and may be used and reprinted without special permission. Citation as to source is appreciated.

**Suggested Citation**

National Institute of Mental Health, Series FN No. 3, A Cost-Effectiveness Methodology for Community Mental Health Centers: Development and Pilot Test. DHHS Publication No. (ADM)81-767, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, 1981.

DHHS Publication No. (ADM)81-767
Printed 1981

# FOREWORD

Mental health program managers are increasingly concerned with maximizing the use of limited resources without decreasing services or impairing the quality of patient care. The phrase "having to do more with less" has become all too familiar. This monograph reports on a methodology developed by Dr. Daniel Fishman under an NIMH contract to examine the cost-effectiveness of services in community mental health centers. Our decision to publish an edited version of the final report was stimulated by a number of developments which were insightfully targeted in 1975 by the author.

In dealing with all the issues and information which must be brought together in order to examine cost effectiveness, the publication draws on topics familiar to many mental health agencies: management information systems, accounting systems, unit of service costs, client outcomes, and program evaluation. These topics are dealt with by Dr. Fishman within a conceptual model that is readily understood by both technical and nontechnical audiences interested in the topic. In addition, information is provided to indicate the more rigorous technical and scientific underpinnings of the methodology for those who wish to pursue its implementation.

With local and State mental health programs gaining increasing sophistication in the uses of data for management purposes, studies of cost effectiveness become more likely. We may well expect modifications in service structure and delivery based on the outcomes of such efforts. In addition, the monograph anticipates a recent trend in public mental health, that of performance contracting. Allocations of service dollars and technical assistance may well be made on the basis of how well programs perform on a number of different measures, including comparisons of costs and impacts of programs.

In providing a consideration of many of the procedural concerns surrounding the development and application of a cost-effectiveness methodology, we feel the monograph is an important addition to the information system series.

Cecil R. Wurster, Chief
Statistical Program Development Branch
Division of Biometry and Epidemiology
National Institute of Mental Health

# PREFACE

Through Federal legislation of the past 15 years, a national network of community mental health centers (CMHCs) has developed. Each center is mandated to provide a wide range of mental health services to the residents of its geographic catchment area. Over the years, there have been efforts to develop accountability systems for these centers to evaluate the extent to which they are meeting their primary goal of providing services which are as relevant, accountable, and cost effective as possible. The present monograph summarizes one such effort, which was carried out under NIMH contract, "Development and Test of a Cost-Effectiveness Methodology for CMHCs." The monograph is a shortened and edited version of the contract's final report (Fishman 1975*a*). The objectives of the contract were:

- To develop a conceptual model of cost-effectiveness analysis as it applies to CMHCs
- To relate this model to decisionmaking about CMHC services by such groups as State and Federal legislators; NIMH planners; and individual agency managers, administrators, clinicians, and board members
- To develop a generic, computerized cost-effectiveness methodology for implementing the model
- To pilot test the resulting methodology with a sample of workload, cost, and outcome data from clients at a particular CMHC
- To assess the feasibility of transferring the methodology to other centers

The major task in accomplishing these objectives was to bring together diverse concepts and techniques from a variety of fields and to revise and integrate them into a single, systematic, generic decisionmaking model and implementation methodology. Moreover, this methodology had to meet scientific standards of reliability and validity; administrative standards of feasibility; and decisionmaking standards of clear-cut applicability to real, existent decisionmaking situations. Some of the diverse sources of these concepts and procedures include:

- cost accounting
- clinical recordkeeping
- computer technology
- management information systems
- governmental policymaking
- psychological assessment and measurement
- psychotherapy outcome research
- psychological statistics
- psychological research design
- the psychology of cognitive judgment
- health economics

The decisionmaking conceptual model and implementation methodology that were developed are designed to be pragmatically relevant to many audiences involved in the funding, governing, administration, evaluation, and day-to-day operation of CMHCs. Although these audiences differ in their technical expertise and background, a common concern is the proper allocation of the Nation's limited health service resources to CMHCs, based upon objective cost-effectiveness data. And such allocation can only be done by collaboration between technically sophisticated professionals, who must assemble the cost-effectiveness data, and less technically sophisticated legislators, county commissioners, mayors, CMHC board members, etc., who must pass final judgement upon these data in terms of deciding how much money to allocate to CMHC programs.



READEX FICHE

This monograph is divided into three parts:

*Part 1*, chapters I-III, presents a nontechnical overview of the cost-effectiveness model and describes its applicability to decisionmaking for community mental health centers. The discussion in part 1 is facilitated by the fact that cost effectiveness is the basic evaluation model employed in popular buyer's guide magazines and thus many people are already familiar with cost-effectiveness concepts.

*Part 2*, chapters IV-VI, presents a relatively nontechnical, although fairly detailed, description of a specially developed, generic, computerized methodology for implementing cost-effectiveness analysis at individual CMHCs. This methodology is called the "D*A*R*E" system (Data for Accounting, Records, and Evaluation).

*Part 3*, chapter VII, presents a summary of the project and some of its general implications for mental health planning.

The monograph was written with different groups of readers in mind. One group of readers, which is expected to read only parts 1 and 3, consists of those who have the least technical involvement in the day-to-day administration and evaluation of CMHCs, e.g., Federal and State legislators, CMHC board members, CMHC clinicians, and the public. A second group of readers is expected to read parts 1 and 3 thoroughly and part 2 in a more summary fashion. These readers consist of individuals who have a moderate technical involvement in the day-to-day administration and evaluation of CMHC services, e.g., center directors, center clinician-administrators, and planners of Federal, State, and county health services. A third group of readers is expected to read thoroughly all three parts of the report and perhaps to follow through with the more technical details in the Final Contract Report (Fishman 1975*a*). These readers are individuals who have the most technical responsibility and involvement in the day-to-day administration and evaluation of CMHC services, e.g., center business managers, and researchers, evaluators, computer programers, and accountants at the center, county, State and Federal levels.

Part 1 of the monograph was written to reach a large audience of individuals who are concerned with CMHC decisionmaking. It is my hope that these chapters will help the technically knowledgable administrator or evaluator to communicate with the less technically sophisticated decisionmaker by presenting cost effectiveness in a way that is understandable to that decisionmaker. Thus, the goal of part 1 is to communicate to nontechnical readers a decisionmaking method to which they will have the following type of response: "I can understand this method, and it would be quite useful to me. I'll thus have the evaluation and accounting professionals I know review the more technical details of this method to see if they meet their technical standards of adequacy. If so, I'm ready to try out the method."

To write a single monograph for multiple types of audiences necessitated stylistic compromises. First, the monograph includes some redundancy in order to set the proper context for each part and each chapter. Second, different parts of the report are written at different levels of detail, complexity, and sophistication, thus creating some discontinuity and reducing the overall flow of the report. However, these stylistic compromises were deliberately accepted as not too high a price to pay to foster communication and collaboration between the technically knowledgeable administrator or evaluator and those less technically knowledgeable individuals whose responsibility is to make crucial decisions about the funding and program priorities of community mental health centers.

The project upon which this monograph is based was carried out at the Adams County Mental Health Center in Commerce City, Colorado, while the author was Associate Director for Administration and Evaluation. In the planning, implementation, and reporting of the project a great many people helped in a multitude of ways. I would particularly like to acknowledge the administration and staff of the Adams Center for their assistance.

Daniel B. Fishman

# CONTENTS


Page

Foreword ..... iii

Preface ..... v

PART I. A COST-EFFECTIVENESS MODEL FOR CMHCS AND ITS IMPLICATIONS FOR DECISIONMAKING

Chapter I. Cost Effectiveness as a Buyer's Guide to Community Mental Health Services ..... 3
Evaluating Self-Buffing Floor Polishes ..... 3
Evaluating Single-Lens Reflex Cameras ..... 3
Evaluating Community Mental Health Services in Terms of the Outline in Table 1 ..... 5
Product Goals ..... 5
Product Components ..... 5
Multiple Performance Criteria ..... 6
Testing and Grading the Performance Criteria ..... 6
Deriving a Rating of Overall Effectiveness ..... 11
Simultaneous Consideration of Cost and Effectiveness ..... 11
Some Important General Aspects of Cost-Effectiveness Methodology in Community Mental Health ..... 11
Emphasis Is Upon Impact Not Process ..... 11
The Methodology Can Be Applied Broadly or Narrowly ..... 11
The Methodology Deals With Questions of Cost Effectiveness, Not Cost Benefit ..... 11
The Methodology Distinguishes Outcome From Effectiveness ..... 11
Results From the Methodology May Be Sensitive to the Time Between Start of Service and Followup Assessment ..... 13

Chapter II. The Application of Cost-Outcome and Cost-Effectiveness Information by CMHC Decisionmakers ..... 14
Cost Effectiveness and Cost Outcome ..... 14
The Informational Needs of CMHC Decisionmakers and the Percentile-Score Model for Cost-Effectiveness Evaluation ..... 14
The NIMH Profile Report: A Potential Vehicle for Nationwide Implementation of Cost and Effectiveness Percentile Scores ..... 17
The Informational Needs of CMHC Decisionmakers and the Research Model for Cost-Effectiveness Evaluation ..... 17

Chapter III. Examples of Actual Cost-Outcome and Cost-Effectiveness Information from the Adams County Mental Health Center ..... 20
Background: The Adams County Mental Health Center ..... 20
Cost and Outcome Base Rates at the Adams Center for All Adolescent and Adult Treatment Clients as a Whole ..... 20

The 16 Different Scales in Figures 4 and 5 ..... 21
The Meaning of the Scores in Figures 4 and 5 ..... 21
Individual Scale Results in Figure 4 ..... 21
Summary Scale Results in Figure 5 ..... 25
Cost and Outcome Base Rates at the Adams Center for All Child Treatment Clients as a Whole ..... 26
Three-Month Cost-Outcome Base Rates for Various Target Groups of Adolescent and Adult Clients at the Adams Center ..... 28
The Use of Change Scores to Measure Outcome ..... 28
The Effect of a Decisionmaker's Values Upon Change Scores ..... 28
The Format of Table 7: "Three-Month Cost-Outcome Base Rates for Various Target Groups of Adolescent and Adult Clients at the Adams Center" ..... 29
The Relationship Between Cost Outcome and Selected Characteristics From Table 7 ..... 31
Cost-Effectiveness Comparisons for Different Brands of Services Delivered to Adolescent and Adult Clients at the Adams Center ..... 31
The Format of Tables 8, 9, 10: "Cost-Effectiveness Comparisons at the Adams Center" ..... 32
The Storefront Study: Table 8 ..... 32
The Monitoring Study: Table 9 ..... 33
The Random Assignment Study: Table 10 ..... 34

PART 2. THE D*A*R*E INFORMATION SYSTEM FOR IMPLEMENTING COST-EFFECTIVENESS ANALYSIS

Chapter IV. Overview of the D*A*R*E Information System ..... 39
Outline of the Evaluation Steps Necessary for a Mental Health Cost-Effectiveness Analysis ..... 39
Design of the D*A*R*E Information System ..... 41

Chapter V. The D*A*R*E System's Approach to Cost Finding ..... 44
The Organizational Matrix of a CMHC ..... 44
"Cost Finding" and CMHC Services ..... 47
Using the Organizational Matrix for CMHC Cost Finding ..... 47

Chapter VI. The D*A*R*E System's Approach to Assessing Service Effectiveness ..... 53
Rationale for the Multidimensional Assessment of Outcome Employing Standard, Substantive Dimensions ..... 53
Psychometrics ..... 54
Training and Reliability ..... 54
Interview Effort ..... 54
Public Accountability ..... 54
Needs Assessment ..... 54
Criteria for Selecting Generic Dimensions To Be Included in an Outcome Interview ..... 55
Outcome Assessment With Child Clients: The Louisville Behavior Checklist ..... 55
Outcome Assessment With Clients Aged 14 and Older: The C*O*C*E Adult Interview ..... 56
"DMV" Analysis: A Method of Combining Multiple Outcome Scores Into a Single Index Weighted for the Decisionmaker's Values ..... 58
Representative Change Scores Generated by the C*O*C*E Adult Interview. 60

PART 3. SUMMARY AND IMPLICATIONS FOR MENTAL HEALTH PLANNING

Chapter VII. Summary and Implications for Mental Health Planning . . . . . 65
Statewide Ramifications of the Pilot Test . . . . . 65
Cost Effectiveness and the Total Service Delivery Process . . . . . 66
Needs Assessment . . . . . 69
Funding and Regulation . . . . . 69
Specifying Services . . . . . 69
Program Design . . . . . 70
Program Evaluation . . . . . 70
Feedback of Program Evaluation Results . . . . . 70
Application of the Cost-Effectiveness Model to the Emerging Human Service Concept . . . . . 71
The Definition of a Human Service Organization . . . . . 71
The Buyer's Guide Model . . . . . 71
Evaluation Steps Required for Cost-Effectiveness Analysis . . . . . 71
Cost Effectiveness and the Total Service Delivery Process . . . . . 71
Summary . . . . . 72

Appendix 1. Elaboration of Some Important General Aspects of Cost-Effectiveness Methodology in Community Mental Health . . . . . 73
Appendix 2. Design Criteria Employed in Developing the D*A*R*E System . . 77
Appendix 3. The C*O*C*E Adult Interview . . . . . 79
Appendix 4. Derivation of Subscales From the C*O*C*E System . . . . . 136
Appendix 5. Technical Procedures for Creating Figures 4 and 5 . . . . . 140
Appendix 6. Technical Procedures for Creating Figure 6 . . . . . 141
Appendix 7. Technical Procedures for Creating Table 7 . . . . . 142
Appendix 8. Technical Procedures for Creating Tables 8, 9, 10 . . . . . 143
Technical Notes . . . . . 145
References . . . . . 147
Index . . . . . 149

## LIST OF TABLES

*Table* *Page*

1. Cost effectiveness as a buyer's guide to CMHC treatment services . . . . . 4
2. Performance criteria for evaluating CMHC services to adolescents and adults . . . . . 9
3. Performance criteria for evaluating CMHC services to children . . . . . 10
4. Sample page from the 1976 profile report for the Adams County Mental Health Center . . . . . 19
5. Weights applied to the 13 individual scales in figure 4 to derive the three different summary scores in figure 5 . . . . . 25
6. Weights applied to the four individual scales in figure 6 to derive the three summary scales . . . . . 28
7. Three-month cost-outcome base rates for various target groups of adolescent and adult clients at the Adams Center . . . . . 29-31
8. Cost-effectiveness comparisons at the Adams Center—The Storefront Study . . . . . 33
9. Cost-effectiveness comparisons at the Adams Center—The Monitoring Study . . . . . 34

10. Cost-effectiveness comparisons at the Adams Center—The Random Assignment Study . . . . . 35
11. How the flowchart in figure 8 accomplishes the evaluation steps in figure 7 . . . . . 43
12. Organizational matrix in two dimensions for the People's CMHC . . . . . 48
13. People's CMHC organizational matrix expanded to accommodate discipline-fixed vs. discipline-variable expenses . . . . . 50
14. People's CMHC organizational matrix expanded to accommodate a breakdown of outpatient, discipline-variable expenses . . . . . 51
15. Comparison of LBCL scores at admission and 3-month followup of a representative group of Adams Center clients, aged 7-13 (N-12) . . . . 56
16. Intercorrelation among the scales derived from the C*O*C*E Adult Interview . . . . . 57
17. Matrix for performing a DMV analysis of scores from the C*O*C*E Adult Interview . . . . . 59
18. Comparison of C*O*C*E interview scale scores at admission and followup . . . . . 61
19. Comparison of C*O*C*E interview summary-scale scores at admission and followup . . . . . 62
20. Illustrative roles required for development and maintenance of a State mental health service delivery system . . . . . 68

## LIST OF FIGURES

*Figure* *Page*
1. How CMHC services work to help treatment clients . . . . . 7
2. How CMHC services work to help prevention clients . . . . . 8
3. A decisionmaking table for choosing between any two brands of a product on the basis of their cost and effectiveness . . . . . 12
4. Average outcomes for Adams Center adolescent and adult clients, scales 1-13 . . . . . 22-23
5. Average outcomes for Adams Center adolescent and adult clients, summary scales . . . . . 24
6. Average outcomes for Adams Center child clients . . . . . 27
7. Evaluation steps required to perform a cost-effectiveness comparison between target groups $x^a$ and $x^b$ . . . . . 40
8. Flowchart of how the D*A*R*E System performs the cost-effectiveness analysis in figure 7 . . . . . 42
9. Organizational matrix in three dimensions for the People's CMHC . . . . 46
10. Steps involved in the development and maintenance of a mental health service delivery system . . . . . 67

# Part 1. A Cost-Effectiveness Model for CMHCS and Its Implications for Decisionmaking

*Audience:* Part 1 is intended for all readers, particularly those who are interested in CMHCs but have little technical involvement in the day-to-day administration and evaluation of these agencies, e.g., Federal and State legislators, CMHC board members, and the public.

*Content:* Chapter I presents a cost-effectiveness model for evaluating mental health services. The model is based upon the buyer's guide approach employed by popular product evaluation magazines. In the model, various brands of a product, such as CMHC services, are compared for relative cost and effectiveness. The brand recommended is that which is less costly and/or more effective.

Chapter II describes how knowledge from the cost-effectiveness model can be used to meet the information needs of groups who make decisions about CMHCs—groups such as government officials, health insurance companies, and local CMHC boards.

Chapter III presents actual results from illustrative cost-effectiveness studies conducted at a typical CMHC. These studies focus on outpatients. They include comparisons between services delivered by a "storefront office" vs. a "main office"; by different geographic terms; by therapists differing in training, experience, and pay; and by different types of intake procedures.

# Chapter I

# COST EFFECTIVENESS AS A BUYER'S GUIDE TO COMMUNITY MENTAL HEALTH SERVICES

Across the country, there are over 600 community mental health centers (CMHCs). These centers are mandated to provide a wide range of mental health services to the residents of a specified service region (catchment area).

The goal of any CMHC is to help catchment-area residents cope with their emotional, mental, and behavioral problems. While these agencies are composed of similar basic ingredients, they differ extensively in the specific characteristics of the services they provide. We can consider an individual CMHC as a particular brand of the product called community mental health services. Federal, State, and local authorities are the primary purchasers of this product, and their basic question is, "How do we decide what brand to buy?"

We are all faced with such choice decisions, and most of us at one time or another make use of the evaluation and decisionmaking model employed by consumer magazines. Some of these magazines address the important aspects of decisionmaking based upon cost and effectiveness criteria. To illustrate this model with two down-to-earth examples, let us consider one magazine's evaluation of self-buffing floor polishes and single-lens reflex cameras.

## Evaluating Self-Buffing Floor Polishes

The typical outline of a product analysis is presented in the left-hand column of table 1. In the middle column of the table, the general outline is applied to the evaluation of self-buffing floor polishes. The analysis begins with a statement of *product goals*: to dry to a luster without rubbing and to provide a tough film to survive washing.

Next is a description of the *basic components* of self-polishers (*Consumer Reports*, February 1975):

> Fundamentally, they consist of a wax (or a synthetic film-former) and a liquid base (or carrier). After the polish is applied, the carrier evaporates, leaving a film, which becomes a smooth protective coating.

The article next specifies eight *performance criteria* against which the various brands are tested and graded. These grades are then combined into an *overall effectiveness rating*.

Finally, the article considers the *cost* of each brand of polish. If the article had found a brand of polish that was not only rated high in overall effectiveness but also priced relatively low, it would have given the brand a "best buy" designation. In fact, in the review of the 23 brands of polishes, none was found to be a "best buy." An additional result of interest to the cost-conscious consumer was the finding that there was very little connection between brand price and effectiveness and that a careful buyer could save money without sacrificing quality.

We can begin to see how this kind of analysis could be useful for evaluating mental health services.

## Evaluating Single-Lens Reflex Cameras

One consumer guide magazine (*Consumer Reports*, November 1974) evaluated 35 mm, single-lens reflex cameras (SLRs). The article began with a statement of *product goals*, including the taking of superior pictures and greater ease in changing lenses. The article then described how these goals are accomplished by the *basic components* of the camera:

> In the SLR camera, a mirror and prism arrangement lets you look directly through the lens [and] because you always view through the lens, the SLR system is ideally suited for interchangeable lenses.

The article next introduces three major and eight minor *performance criteria* against which each of the different camera brands was evaluated.

The grades for each camera were combined into a numerical *overall effectiveness rating*, with the major performance criteria being weighted more highly than the minor ones in contributing to the overall score.

The overall ratings of the SLR cameras were made regardless of cost. Subsequent *consideration of cost*

**Table 1. Cost Effectiveness as a Buyer's Guide to CMHC Treatment Services**

| General steps for evaluating various brands of a product | Application of the general steps[1] to "brand *a*" vs. "brand *b*" self-buffing floor polishes | Application of the general steps[1] to "brand *a*" vs. "brand *b*" CMHC treatment services |
|---|---|---|
| 1. Description of the *product's goals*. | 1. The purpose of such polishes is to *dry to a luster without rubbing* and provide a tough film to survive washing. | 1. The purpose of CMHC treatment services is to *reduce behavioral, emotional, and mental impairments* in service clients. |
| 2. Description of the basic *components* of the product | 2. Fundamentally, self-polishers consist of *a wax and a liquid base*. After the polish is applied, the base evaporates, leaving a film, which becomes a smooth protective coating. | 2. The basic components of treatment services are *contacts* (either face-to-face, by phone, or by letter) between one or more providers, who are in a "giving help" role, and one or more consumers, who are in a "receiving help" role. |
| 3. Specification of *multiple effectiveness criteria* for evaluating the extent to which a particular brand of the product meets the product's goals | 3. Effectiveness is assessed both in terms of "major" criteria, such *as wear and scuff resistance*, and "minor" criteria, such as freedom from haze and resistance to yellowing. | 3. The major effectiveness criteria assumed for treatment services involve *relative reduction in various types of impairment*, e.g., impairment in productivity, social adequacy, emotional comfort, and the use of alcohol. |
| 4. Presentation of the results of *testing and grading* each brand of the effectiveness criteria | 4. Each brand of polish is *tested* in a standardized manner *on each criterion*; e.g., scuff resistance is assessed by having a machine make rubber-heel marks across polished vinyl-asbestos tiles, and then having judges rate the degree to which the polish is resistant to this simulated scuffing. | 4. For each brand of service, each type of impairment is *measured* both at the beginning of a client's treatment and at followup by a systematic, structured *interview*. *Change scores* between the two interviews can be used to indicate the effectiveness of brand *a* vs. brand *b* services. |
| 5. *Integration* of the multiple grade scores into a single rating of *overall effectiveness* | 5. The Individual Effectiveness scores are summed into a *single summary-effectiveness score*, with higher *weighting* for "major" criteria than for "minor" criteria. | 5. The individual effectiveness scores generated by the interview are integrated into a *single summary-effectiveness score* by means of a specially developed procedure, which uses *weights* to take into account the relative values the decisionmaker places upon the various types of reduction in client impairment. |
| 6. *Simultaneous consideration of cost and effectiveness* differences among brands to make a final evaluation | 6. If one brand of polish is rated as high in overall effectiveness and is also priced relatively low, it is designated a "*best buy*." | 6. The cost and effectiveness of brand *a* vs. brand *b* treatment services are simultaneously compared via the *decision-table* in figure 3. |

[1] *Consumer Reports*, Feb. 1975.

*and effectiveness together* yielded results similar to the floor polish analysis: No one brand was found to be a "best buy," and there was no overall correlation between cost and quality of a camera and its overall performance rating.

## Evaluating Community Mental Health Services in Terms of the Outline in Table 1

Now let us see how this approach can help a buyer select the best brand of mental health services. The steps are outlined in the right-hand column of table 1.

### Product Goals

The CMHC goal is to reduce mental, emotional, and behavior impairments in target groups within its catchment area. A target group consists of individuals who share a particular present, or potential future, impairment in their functioning. Examples of impairments are:

- thought disorder
- depression
- alcohol abuse
- marital conflict
- inability to establish social relationships.

These create "mental health needs," and, when we study a catchment area to determine what types of impairment exist and to what extent, we call the result a "needs assessment" study, which can be used to set specific objectives within the overall goal.

### Product Components

A CMHC is an organization which establishes contacts between one or more center staff members who are in a "giving help" role and one or more community members who are in a "receiving help" role. The community members can be either treatment clients, who are individuals with already developed mental health problems and impairments, or prevention clients. Prevention clients do not come to the CMHC with manifest problems. But such individuals are in, or about to enter, stressful situations; and the CMHC can help them to deal better with the stressful situations so as to prevent subsequent mental, emotional, and behavioral problems. Here are three examples relevant to prevention services:

- Disadvantaged preschoolers are usually in more stressful situations than nondisadvantaged preschoolers. If the disadvantaged are not given special help, these children are likely to develop learning and social impairments.
- Adults experiencing stress often go to their family doctors or ministers for help and counsel. If the doctors and ministers can be trained to provide the best type of constructive help, these adults can be aided to avoid developing emotional, mental, or behavioral impairment.
- Mental health public education, through person-to-person meetings or the media, can help to educate catchment area residents to deal with stressful experiences and situations. The chance that stress will lead to functional impairment can be reduced.

The major types of CMHC contacts (product components) are as follows.

1. *Treatment Contacts Directed Toward Treatment Clients*
   - A. *Inpatient Contact:* a contact with a client which lasts for 23 or more hours within a 24-hour period. Such a contact usually takes place in a facility such as a hospital, foster care home, or halfway house.
   - B. *Partial Care Contact:* a contact with a client which takes place during regular scheduled working hours and which lasts less than 23 but more than 3 consecutive hours. Such a contact usually takes place in the context of a structured therapeutic program which is planned for a particular part of the day, e.g., daycare or nightcare.
   - C. *Outpatient Contact:* a contact with a client which takes place during regularly scheduled working hours and which last 3 consecutive hours or less.
   - D. *After-Hours Emergency Contact:* a contact with a client on an unplanned, emergency basis occurring during nonscheduled working hours.
2. *Consultation and Education Contacts Directed Toward Prevention Clients*
   - E. *Education Contacts.* These contacts involve target group clients directly. Examples are mental health public education and coping workshops to help target-group individuals who are experiencing such stressful situations as divorce, death of a loved one, loss of a job, dealing with a newborn birth-defective child, and entering a nursing home.
   - F. *Consultation Contacts.* These contacts involve target-group clients indirectly. In these contacts, the CMHC's services are given to community caregivers, i.e., individuals (such as physicians, ministers, and lawyers) and agencies

(such as welfare, the school, and the police) who in turn provide direct help to target group individuals in stressful situations. The goal of these consultation contacts is to train and aid these caregivers to provide better help to catchment area residents for adaptively dealing with stressful situations and experiences. Thus, while consultation contacts do not directly involve target-group individuals, the effectiveness of these contacts must still be judged by their ultimate impact upon these individuals.

The way in which these basic CMHC components work to achieve the product goals are diagramed in figures 1 and 2. The target group for the CMHC contacts presented in figure 1 consists of treatment clients who manifest mental, emotional, or behavioral impairment. The services are "effective" to the extent that the target group's functioning becomes less impaired than would "naturally" be expected, e.g., the target group's impairment is reduced, or stabilized, to counteract further deterioration. In figure 2 the target group consists of prevention clients who are not impaired but can be expected to become so without treatment. The prevention services are "effective" to the extent that the target group becomes less impaired than it otherwise could be expected to.

### Multiple Performance Criteria

It is at this point where the evaluation of mental health services begins to become complicated and, in some aspects, controversial. It is suggested that the most appropriate performance criteria for evaluating a CMHC's services involve measuring reduction in standardized types of impairment which the CMHC is trying to reduce.[1] A list of these impairments for adolescents and adults is presented in table 2 (items 1-11). In addition, the table contains three other performance criteria that are frequently associated with CMHC services: *Independence from welfare* and *Independence from mental health services* evolve from the goal that mental health services should help dependent individuals become self-sufficient. *Consumer satisfaction*, the last criterion in the table, reflects the CMHC's effectiveness from the client's point of view.

Table 3 presents a parallel list of functional impairments for children.[2]

### Testing and Grading the Performance Criteria

The selection of performance criteria must be accompanied with techniques of measurement. Each criterion must be translated into reliable and valid assessment procedures which are applied in a systematic and consistent manner to each brand of the product.

For example, in the article on floor polishes, the magazine describes how the performance criterion of "wear resistance" was tested:

> We applied samples of each polish to a checkerboard floor—alternating black and white tiles of vinyl-asbestos, a very widely used hard-surface floor-covering material. We installed the tiles in Consumer Union's busy corridors, where they might be walked on a thousand times a day. After periodic sweepings, damp-moppings, and washings with detergent, they were inspected for signs of wear.

As another example, in the article on SLR cameras, a number of procedures were described for assessing the overall optical quality of the pictures produced by different cameras. One such procedure was the "blur test," described as follows:

> Most photographs with 35mm cameras are taken hand-held...Camera operation manuals usually instruct you to hold the camera steady or to brace it against yourself to avoid blurred photographs, especially at relatively slow shutter speeds. What the manuals don't tell you, however, is how good the camera itself is in preventing blur caused by vibration of the mirror or the shutter mechanism.
>
> Accordingly, we tested our models hand-held at 1/20th and 1/60th of a second—the slowest shutter speeds recommended for hand-held operation. We took a series of hand-held photos of circular dot targets with each camera, and the resulting images were evaluated for blur. The spread in results was such that the best cameras were as good at 1/30th of a second as the average cameras were at 1/60th of a second. Blur performance therefore became a moderately important factor in our Ratings of overal optical quality.

The most reliable, valid, and feasible methods for assessing human behavior are far more controversial than are methods for assessing floor polishes or SLR cameras. Moreover, different methods for assessing the same human behavior tend to give more divergent results than different methods for assessing the same characteristic of floor polishes of SLRs. Thus, once an evaluator has chosen particular methods for assessing the CMHC performance criteria presented in tables 2

---

1. Superscript numbers refer to technical notes at the end of the monograph.

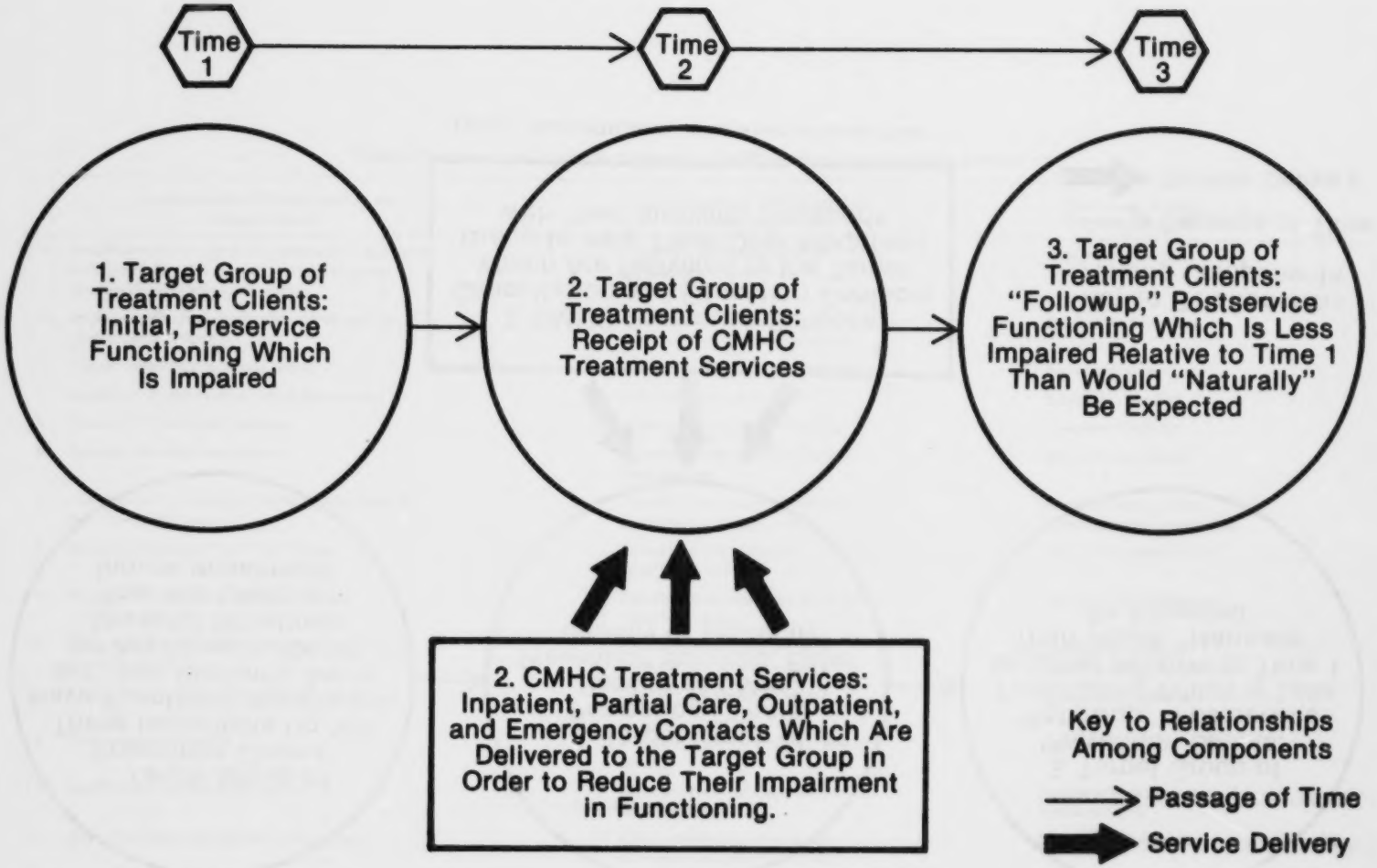
Time 1
Time 2
Time 3
1. Target Group of Treatment Clients: Initial, Preservice Functioning Which Is Impaired
2. Target Group of Treatment Clients: Receipt of CMHC Treatment Services
3. Target Group of Treatment Clients: "Followup," Postservice Functioning Which Is Less Impaired Relative to Time 1 Than Would "Naturally" Be Expected
2. CMHC Treatment Services: Inpatient, Partial Care, Outpatient, and Emergency Contacts Which Are Delivered to the Target Group in Order to Reduce Their Impairment in Functioning.
Key to Relationships Among Components
Passage of Time
Service Delivery

**Figure 1. How CMHC services work to help treatment clients**

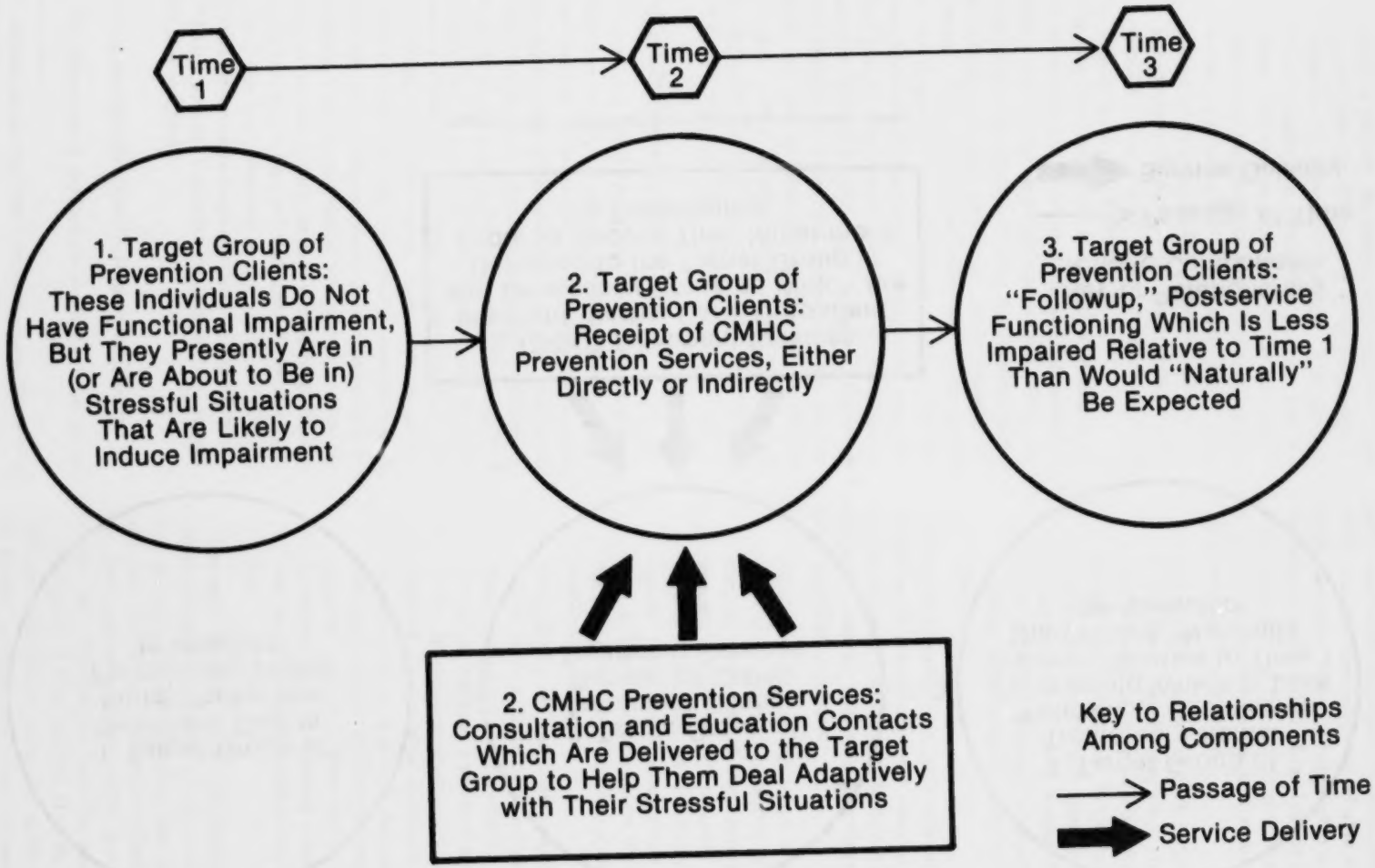
Time 1
Time 2
Time 3
1. Target Group of Prevention Clients: These Individuals Do Not Have Functional Impairment, But They Presently Are in (or Are About to Be in) Stressful Situations That Are Likely to Induce Impairment
2. Target Group of Prevention Clients: Receipt of CMHC Prevention Services, Either Directly or Indirectly
3. Target Group of Prevention Clients: "Followup," Postservice Functioning Which Is Less Impaired Relative to Time 1 Than Would "Naturally" Be Expected
2. CMHC Prevention Services: Consultation and Education Contacts Which Are Delivered to the Target Group to Help Them Deal Adaptively with Their Stressful Situations
Key to Relationships Among Components
Passage of Time
Service Delivery

**Figure 2. How CMHC services work to help prevention clients**

**Table 2. Performance Criteria for Evaluating CMHC Services to Adolescents and Adults**

| | Condition which CMHC services are trying to reduce | Condition which CMHC services are trying to facilitate | Short name of goal of CMHC services |
|---|---|---|---|
| 1. | Insufficient hours spent in "productive" activities, which include a job, school work, childcare, housework, and volunteer work | Appropriate hours spent in productive activities | Productive hours |
| 2. | Impairment in functioning when engaged in productive activities | Adequacy of functioning when engaged in productive activities | Productive adequacy |
| 3. | Impairment in social relationships | Adequacy of social relationships | Social adequacy |
| 4. | Emotional distress (anxiety and depression) | Inner emotional comfort | Emotional comfort |
| 5. | Presence of psychotic thinking | Absence of psychotic thinking | Adaptive thinking |
| 6. | Excessive alcohol intoxication | Freedom from excessive alcohol intoxication | Alcohol moderation |
| 7. | Impairment in a variety of areas of functioning due to alcohol abuse | Freedom from alcohol-induced impairment in functioning | Freedom from alcohol impairment of functioning |
| 8. | Excessive or illegal use of "soft" drugs | Freedom from excessive or illegal "soft" drug use | "Soft" drug moderation |
| 9. | Excessive or illegal use of "hard" drugs | Freedom from excessive or illegal "hard" drug use | "Hard" drug moderation |
| 10. | Impairment in a variety of areas of functioning due to drug abuse | Freedom from drug-induced impairment in functioning | Freedom from drug impairment of functioning |
| 11. | Presence of antisocial, illegal behavior | Absence of antisocial, illegal behavior | Lawabiding behavior |
| 12. | Need for welfare funds | Freedom from the need for welfare funds | Independence from welfare |
| 13. | Need for mental health services | Freedom from the need for mental health services | Independence from mental health services |
| 14. | Any of the above, as defined by the client | Client satisfaction with the services received from the CMHC | Consumer satisfaction |

**Table 3. Performance Criteria for Evaluating CMHC Services to Children (adapted from Miller 1975)**

| Condition which CMHC services are trying to reduce | Condition which CMHC services are trying to facilitate | Short name of goal of CMHC services |
|---|---|---|
| 1. Aggression, including three types of behavior:<br>A. Infantile Aggression: egocentric, emotionally demanding, and interpersonally belligerent behavior.<br>B. Hyperactivity: impulsive and constant motion involving both large and small muscles<br>C. Antisocial Behavior: illegal and destructive behavior whose main thrust is against property and person, self, and others | 1. Behavior which is:<br>A. Considerate<br>B. Physically controlled in a comfortable manner<br>C. Not illegal or antisocial | 1. Socialized Behavior |
| 2. Inhibition, including three types of behavior:<br>A. Social Withdrawal: an apparant reluctance to interact with others and a preference for social isolation and uninvolvement<br>B. Sensitivity: disability characterized by a subjective sense of "unlikeableness" combined with a tendency to cope with stress by a combination of somaticizing and impulsive, immature, and rivalrous behaviors<br>C. Fear: refers to a general anxiety focused around multiple objects, with special concern over sleep and death | 2. Behavior which is:<br>A. Socially involved<br>B. Self-confident<br>C. Nonanxious | 2. Self-esteem |
| 3. Learning Disabilities, including two types of behaviors:<br>A. Academic Disability: items reporting specific deficits in academic skill and abilities commonly associated with learning failures<br>B. Immaturity: refers to both social and physical processes; for example, babyishness, dependency, whining, slow physical growth, and clumsy, poor coordination. | 3. Behaviors which indicate:<br>A. Academic competence<br>B. Age-appropriate functioning | 3. Learning adequacy |
| 4. Need for mental health services | 4. Freedom from the need for mental health services | 4. Independence from mental health services |
| 5. Any of the above, as defined by client's parent or guardian. | 5. Parent or guardian satisfaction with the services his/her child has received from the CMHC. | 5. Consumer satisfaction |

and 3, it is more incumbent upon that investigator to present a detailed rationale as to why that particular method was chosen over other methods than it is upon the evaluator of floor polishes or SLR cameras.

### Deriving a Rating of Overall Effectiveness

In a typical evaluation, multiple performance criteria are classified into "major" or "minor." When the grades are integrated into one overall rating of effectiveness, the grade scores for major criteria are weighted more heavily than those for minor criteria. Again, as with methods of assessing human behavior, the relative weighting of various performance criteria is more controversial for human services than for the types of products like floor polishes and SLR cameras. For example, some mental health decisionmakers and consumers feel that the client's need for welfare funds or mental health services should be given little or no weight, while others feel that these two criteria should be given considerable weight. Again, mental health decisionmakers and consumers frequently differ widely among themselves as to the relative importance of emotional and social criteria as opposed to productivity and law-abiding criteria. Thus, a very important requirement of a general buyer's guide for evaluating CMHC services is a procedure to allow a buyer to weigh each of the performance criteria differentially when deriving a single score of overall effectiveness.[3]

### Simultaneous Consideration of Cost and Effectiveness

In the typical *Consumer Reports* format, once the previous step of deriving a single brand-effectiveness score has been achieved, the highest category of effectiveness is analyzed to see if one of the brands is priced significantly lower than the others. If such a brand exists, it is designated a "best buy." Usually, with CMHC services, a purchaser wants more detailed information about the relationship between the cost and effectiveness of the various brands. Figure 3 presents a systematic decision table for choosing between any two brands of a product on the basis of their cost and effectiveness. As can be seen from the exhibit, for six of the nine possibilities, the buyer's decision is quite straightforward. For one of the possibilities, in the middle of the table, the buyer is told that there is no difference between the brands, and thus the buyer's decision as to which brand to buy must be based upon other criteria, such as ease of purchase. The symbol "?" is placed in the upper left-hand and lower right-hand boxes because, in these two cases, the buyer's decision is not straightforward. In the upper left-hand box, brand *a* is less costly but also less effective than brand *b*. The question facing the buyer about this box is, do the cost savings of brand *a* justify its reduced effectiveness? Similarly, the question arising from the lower right-hand box is: Is the additional effectiveness of brand *a* large enough to justify the additional cost?

Cost-effectiveness analysis cannot by itself answer these questions. But a flexibly structured cost-effectiveness model for mental health services can provide the information which, when combined with an understanding of community priorities, can lead to intelligent purchasing decisions.

## Some Important General Aspects of Cost-Effectiveness Methodology in Community Mental Health

The next two chapters illustrate the nature and specific use of a cost-effectiveness methodology in community mental health. Before proceeding, it is appropriate to summarize some of the salient features of a cost-effectiveness methodology, including strengths of the technique and also cautions in its application. A more detailed description of these features is presented in appendix 1.

### Emphasis Is Upon Impact Not Process

This methodology identifies effectiveness in terms of "Have we helped clients get better?" and "Have we kept clients from getting worse?"—not in terms of "How many psychiatrists do we have on the staff?"

### The Methodology Can Be Applied Broadly or Narrowly

It can compare alternative services within a single CMHC, or it can compare CMHCs with State hospitals. It can focus on an entire target population or a subset such as Anglo, male, adult, paranoid schizophrenics. The key issues are consistency of product goals and the links between goals and basic components.

### The Methodology Deals With Questions of Cost Effectiveness, Not Cost Benefit

It will help us to decide between alternative ways to provide mental health services, but it won't address questions such as "Should we spend more money on mental health services or education?"

### The Methodology Distinguishes "Outcome" From "Effectiveness"

| | | COST COMPARISON BETWEEN BRANDS *a* AND *b* | | |
|---|---|---|---|---|
| | | *a* COSTS LESS | *a* COSTS THE SAME | *a* COSTS MORE |
| EFFECTIVENESS COMPARISON BETWEEN BRANDS *a* AND *b* | *a* IS LESS EFFECTIVE | ? | CHOOSE *b* | CHOOSE *b* |
| | *a* IS AS EFFECTIVE | CHOOSE *a* | NO DIFFERENCE | CHOOSE *b* |
| | *a* IS MORE EFFECTIVE | CHOOSE *a* | CHOOSE *a* | ? |

**Figure 3. A decisionmaking table for choosing between any two brands of a product on the basis of their cost and effectiveness**

The methodology deals with the difference between the "outcome" of services, which refers to change in a client's functioning that is *simply concurrent* with receipt of the services; and the "effectiveness" of those services, which refers to the services' capacity to *cause* positive change in a client's functioning.

**Results From the Methodology May Be Sensitive to the Time Between Start of Service and Followup Assessment**

All results should be understood to be valid only for the particular timespan used in the evaluation.

# Chapter II

# THE APPLICATION OF COST-OUTCOME AND COST-EFFECTIVENESS INFORMATION BY CMHC DECISIONMAKERS

## Cost Effectiveness and Cost Outcome[1]

There is an important distinction between "outcome," which refers to the change in a client's functioning that is concurrent with treatment; and "effectiveness," which refers to a treatment-caused change in functioning. Assessing preservice functioning and comparing it with postservice functioning merely yields the change in functioning over time. This change or "outcome" may or may not have been caused by the CMHC services. However, if two comparable groups of clients receive different types of CMHC services, then differences in functioning over the course of treatment can be ascribed to differences in services. This is true because it can be assumed that the treatment is the only systematic difference between the two groups. Other possible factors can be considered equally powerful in both groups.

Cost effectiveness is defined as the comparison of a cost-outcome statement about one group of clients receiving service A with the cost-outcome statement of another comparable group of clients receiving service B. Each cost-outcome statement is viewed as a summary of the answers to three questions about a particular program: (a) What *types* of clients are being served? (b) What is the *cost* per group member over a specified period of time? (c) What is the *outcome* per group member over a specified period of time?

One of the limitations of treatment-outcome information in evaluating CMHC services occurs because there is no commonly accepted, absolute criterion of treatment success which defines whether a client has been adequately helped. If such a criterion were available, any outcome figure could be compared against the criterion to yield a conclusion about treatment effectiveness. For example, there are certain areas of general medicine in which treatment success can be clearly defined, such as cure of an acute, infectious disease by the complete disappearance of symptoms, or saving a life by the performance of a tracheotomy.

However, the absence of an absolute criterion of program success is not a problem unique to mental health. Rather, it is typical of programs which deliver education, welfare, and other human services. For example, even in general medicine, there are an increasing number of illnesses in which absolute cures are not possible. This is particularly true of the treatment of medical patients who have chronic diseases such as kidney failure, emphysema, chronic bronchitis, asthma, and heart conditions, in which the chronic nature of the illness is such that symptoms can be alleviated to varying degrees but not completely eliminated.

## The Informational Needs of CMHC Decisionmakers and the Percentile-Score Model for Cost-Effectiveness Evaluation

There are at least seven distinct groups of individuals who make important decisions about CMHCs for whom cost-effectiveness information can be extremely useful. One very important group includes Federal, State, and local government officials who have to decide how much public money is to be appropriated for what types of CMHC services. These decisionmakers are under increasing pressure from a variety of forces to document that the services they are funding and administrating are as efficient and effective as possible. These forces include:

- The increase in competing demands for human services dollars
- Growing economic and political conditions which prohibit large increases in public human-service dollars
- The growing "consumerism" movement, which demands more and more evidence that health services are reasonably priced and effective
- Publicity about medical malpractice, which has sensitized the public to the need for objective evaluation of the quality of all health services
- Public awareness and concern about the

skyrocketing costs of all health services

A second group of decisionmakers is the Joint Commission on Accreditation of Hospitals (JCAH). This is a private organization which is supported by evaluation fees from medical facilities. The JCAH was originally formed to develop standards of cost and performance (effectiveness) for hospitals and to evaluate hospitals against those standards. Agencies which meet these standards receive an accreditation which has become in practice the criterion by which hospitals become eligible for reimbursement by most health insurance plans. Recently, at the request of the National Council of Community Mental Health Centers, JCAH has been developing cost and performance standards for CMHCs. Thus, the following decision question concerns the Commission about each particular CMHC: Does the functioning of the center meet national cost and performance standards, which merit its accreditation? Such accreditation is very important for a CMHC because, in line with the precedent set by hospitals, health insurance companies are actively considering using it as the criterion of eligibility of service reimbursement.

A third group of decisionmakers are health insurance companies. Aside from the issue of JCAH accreditation, health insurance companies have to develop criteria for deciding reasonable costs of various types of mental, emotional, and behaviorial disorders. Once these reasonable costs are established, they are then used to set a maximum cost of services to treat a particular type of disorder which the insurance plan will cover. The need for such coverage maximums was highlighted by adverse publicity about two health plans for Federal employees in which no coverage maximums were set and, as a result, many blatant instances of service overreimbursement occurred (Foley 1975).

A fourth group of decisionmakers are CMHC boards. One basic responsibility of these boards is to monitor the overall cost and effectiveness of services delivered by a center in order to assess whether the present staff of the center are delivering high quality services at a reasonable cost. If this is not being done, the board must decide what policy, staff, and/or organizational changes must be made in order to achieve such services.

A fifth group of decisionmakers are CMHC directors and other administrative staff, such as team leaders. Sample decision questions facing these individuals are:

- Can the cost effectiveness of services to a particular target group be improved by instituting changes in staff, treatment procedures, and/or center organization?
- Are certain staff doing an outstanding job for which they should be rewarded? Are certain staff members doing a very poor job for which they should be penalized, transferred, and/or receive additional training?
- When goals and objectives for the center's efficiency and effectiveness are not met, what changes should be instituted? When goals and objectives are exceeded, who should be rewarded and in what way?

A sixth group of decisionmakers is individual clinicians. In evaluating any particular client, a clinician must decide what types of service to provide that client and in what intensity in order to give the most cost-effective service.

Finally, a seventh group of decisionmakers is composed of catchment area individuals who voluntarily seek treatment for themselves or who refer friends and relatives for treatment. These individuals must decide whether their CMHC's services are of high quality and reasonable cost so that they are attractive alternatives for help.

The information needs of all these decisionmaker groups are basically quite similar. They can best be illustrated by considering the following example:

- A hypothetical CMHC, the People's Center, serves a typical inner-city catchment area in the northeast part of the country. One or more of the above groups of decisionmakers are attempting to evaluate the cost and effectiveness of the overall clinical services delivered by the People's Center.

In light of the discussion at the beginning of this chapter concerning the difference between outcome and effectiveness, if the decisionmaker is to evaluate the cost effectiveness of the People's Center, there are two basic questions to be answered:

1. What is the cost-outcome of the services of the People's Center across all its clients taken as one target group?

2. How does the cost outcome of these services compare with the cost outcome of other programs which serve the same type of target group? That is, relative to other CMHCs which serve an inner-city catchment area in the Northeast, what is the cost-effectiveness of the People's Center?

Question 1 can be answered by assessing the average cost and outcome of the services delivered by the People's Center. Such an assessment is fairly straightforward and will be illustrated in chapter III by an actual cost-outcome study performed at the Adams

County Mental Health Center as part of the present project.

To answer question 2 is more complicated. One approach is to adapt the achievement-score model used by most public schools for judging students' performance. In this model, the same achievement tests are administered to nationally representative samples of different grades, each of which is considered a different target group. Then various kinds of standardized scores are generated on the basis of the results. The score that we shall use for illustration is the percentile score. Such a score indicates the percent of the population whose score is equal to or lower than the score in question. For example, if a third-grade class obtains an average score of 162 on a standardized math test, and if a score of 162 is at the 74th percentile, this means that the class score of 162 was as high or higher than 74 percent of all other third-grade classes which took the test, i.e., 74 percent of all third grades had scores of 162 or less.

Adapting the percentile achievement-score model to the evaluation of CMHC services would involve the following steps:

- *Selection of relevant target groups.* For example, target groups could be selected on the basis of such variables as geographical region of the country and type of living situation, e.g., inner-city vs. other-urban vs. suburban vs. rural. Thus, one target group might be all clients seen by inner-city CMHCs in the Northeast.
- *For each target group, selection for assessment of all members or a representative sample of members of the target group.* For example, if the target group was all clients seen by inner-city CMHCs in the Northeast, clients might be selected from representative centers in the inner-city areas of such places as Boston, Providence, Cleveland, New York, and Philadelphia.
- *For each target group, assessment to determine the cost and outcome figure for each target group member selected.*
- *From the results of the above step, derivation of cost and outcome percentile scores.* For example, if the target group was all clients seen by Northeast, inner-city CMHCs, and a cost of $500 per client turned out to be at the 50th percentile, this would mean that 50 percent of all Northeast, inner-city clients had a treatment cost of $500 or less.
- *Once the percentile scores were derived, application of the same standardized assessment to a new center would then allow the center's services to be evaluated in terms of percentile scores.*

Suppose the above steps were successfully implemented for different target groups of CMHC clients. The resulting information could be attached to both positive and negative management sanctions. In developing such use of the information, it would be highly desirable to begin with positive sanctions only. Negative sanctions could later be added after the operational feasibility, reliability, and validity of the information had been demonstrated. Some examples of positive sanctions which could be attached to cost-effectiveness information by the various types of decisionmakers discussed above include:

- When comparing among similar types of CMHCs, Federal, State, and local government officials might want to build in positive financial incentives for those centers which were below 20 percent on cost and/or above 80 percent on outcome.
- When comparing similar types of CMHCs, the joint commission might decide to employ the percentile scores as one basis for accreditation—e.g., centers with a cost percentile below 80 percent, and/or an outcome percentile above 20 might be given accreditation.
- Health insurance companies might employ the percentiles as a basis for determining benefits. For example, if the 75th percentile cost for the treatment of clients with a diagnosis of schizophrenia was $1,000 a company might set this dollar figure as the maximum of its benefits for such clients. Also, a company might decide to include for reimbursement any CMHC which, when compared with similar types of CMHCs, had an outcome percentile above 15 percent.
- A CMHC board might employ the percentiles of similar types of CMHCs as a basis for monitoring its own center's services. For example, consistent cost percentiles below 40 percent together with consistent outcome percentiles above 60 percent might warrant the board's giving the center's executive director a bonus. Or, a board might use the percentiles to set annual center goals—e.g., a goal could be to raise the center's overall outcome rate from 45th to 50th percentile.
- Like CMHC boards, CMHC directors might use the cost and outcome percentile scores of their centers to monitor the type of job they have been doing and to prospectively set center goals. (Such goal-setting is similar to the "management-by-objectives" model of administration.) Also, a director might choose other centers with very low cost percentiles and/or very high outcome percentiles as models to emulate and from whom consultation can be sought. In addition, if the center in-

cludes different divisions which treat similar types of target groups, the director might employ the percentile scores to determine the amount of merit salary increases for divisional chiefs. (Such an approach is similar to the "management-by-exception" model of administration.) Moreover, division chiefs with outstanding percentile scores might be chosen to consult with the other chiefs.

- Individual clinicians might employ the percentile scores to compare the cost and outcome of particular types of their own clients with the cost and outcome of other clinicians with similar types of clients. If the individual clinician wishes to try out different techniques with similar clients, the precentile scores allow for objective evaluation of the different techniques. Also, the percentile scores facilitate the determination of those clinicians who obtain outstanding success and, thus, who might well possess knowledge and skills that could increase the effectiveness of other clinicians through training.
- Finally, catchment area residents interested in evaluating their own CMHC—either for their own treatment or for referring to treatment family and friends—could use the percentile scores to assess whether their center offers good quality services at a reasonable cost.

## The NIMH Profile Report: A Potential Vehicle for Nationwide Implementation of Cost and Effectiveness Percentile Scores

Each year, every CMHC which is federally funded completes a workload and financial summary questionnaire for NIMH entitled, "Inventory of Comprehensive CMHCs." A few years ago, NIMH began analyzing the information collected on the inventory via a percentile-score model. Each center which completes the inventory receives its own profile report (Taube 1975). The Profile Report presents the center's percentile performance on various workload and financial indicators relative to the following comparison groups: all federally funded CMHCs in the center's State; all federally funded CMHCs in the center's national NIMH region; and all federally funded CMHCs in the Nation. A sample page from the Adams County Mental Health Center's Profile Report for 1976 is presented in table 4.

The present workload and financial indicators on the Profile Report are not directly related to cost outcome as it has been described above. However, under two conditions, the methodology which presently produces the Profile Report could be the mechanism to generate individual center percentile scores which would indicate the center's relative cost and outcome in treating various target groups. The two conditions needed to generate these scores are:

- Inclusion on the annual inventory of questions about a center's average cost and outcome in treating the various target groups.
- Implementation at individual centers of reliable, valid, and comparable procedures, such as those described in part 2 of this monograph, for deriving the information needed to answer these questions.

The second condition would not seem presently feasible for all federally funded CMHCs. However, it would seem feasible to implement this condition for a sample of centers in order to test the relevance of such multi-center, cost-effectiveness information for CMHC decisionmakers.

## The Informational Needs of CMHC Decisionmakers and the Research Model for Cost-Effectiveness Evaluation

The percentile-score model of cost-effectiveness evaluation discussed above is primarily oriented to helping the CMHC decision maker distinguish cost and effectiveness differences among actual, presently existing programs. An alternative question facing the CMHC decisionmaker is to make cost-effectiveness choices between different, experimental programs which vary in certain systematic, theoretical ways. The information needs of such a decisionmaker can be met by a research model of cost-effectiveness evaluation which involves the use of experimental and quasi-experimental research methodologies traditionally employed by psychologists (Campbell 1969).

In the research model, members of the same target group are actually or, in effect, randomly assigned to two or more programs which are explicitly designed to vary in the desired systematic ways. Such a procedure allows the researcher to conclude that any variations between the cost and effectiveness of the programs are attributable to their systematic differences. For example, suppose a decisionmaker is focusing upon the treatment of neurotic depression and is trying to decide between treatment *A*, which involves drug therapy by a general practitioner, and treatment *B*, which involves the same treatment as *A* plus a 50-minute, once-a-week session of insight-oriented psychotherapy.

The informational needs of the decisionmaker could be met by designing a research study in which neurotic depressives were in effect randomly assigned to treatments *A* or *B*. The results of such a study concerning the relative cost and effectiveness of treatments *A* and *B* could then be organized via the decision table presented in figure 3 to enable the decisionmaker to make a cost-effective choice between the two brands.

| | Index | Value for Your Center | Median Value—All Centers in Your State | Median Value—All Centers in Your DHEW Region | All Centers in the U.S. 25%ILE | Median 50%ILE | 75%ILE |
|---|---|---|---|---|---|---|---|
| | Caseload | | | | | | |
| | General | | | | | | |
| 79. | Percent of Persons Served Who Reside in Catchment Area | 100.00 | 98.50 | 98.00 | 90.00 | 96.00 | 99.00 |
| 80. | Annual Number of Persons Served | 4304.00 | 3101.00 | 3454.00 | 1989.00 | 2938.50 | 4146.00 |
| 81. | Persons Served Per 1,000 CA Population | 27.47 | 24.61 | 24.61 | 14.84 | 20.16 | 26.73 |
| 82. | Inpatient Episodes As a Percent of Total Episodes | 2.30 | 5.27 | 5.86 | 4.98 | 8.99 | 15.18 |
| 83. | Partial Care Episodes As a Percent of Total Episodes | 7.47 | 6.97 | 5.31 | 3.16 | 5.23 | 8.68 |
| 84. | Outpatient Episodes As a Percent of Total Episodes | 90.24 | 87.24 | 89.16 | 75.71 | 84.29 | 89.74 |
| | Inpatient | | | | | | |
| 85. | Inpatient Episodes Per 1,000 CA Population | 0.71 | 1.10 | 1.49 | 1.18 | 2.19 | 3.57 |
| 86. | Inpatient Days Per 1,000 CA Population | 5.88 | 12.03 | 12.54 | 12.97 | 29.97 | 57.04 |
| 87. | Inpatient Beds Per 1,000 CA Population | -3.00 | -5.00 | 0.10 | 0.09 | 0.15 | 0.24 |
| 88. | Percent Occupancy—Inpatient Beds | -3.00 | 76.44 | 52.84 | 42.48 | 64.57 | 83.80 |
| 89. | Avg. Days Per Inpatient Episode | 8.22 | 8.18 | 8.15 | 8.26 | 12.59 | 19.82 |
| | Partial Care | | | | | | |
| 90. | Partial Care Episodes Per 1,000 CA Population | 2.32 | 2.19 | 1.86 | 0.68 | 1.23 | 2.25 |
| 91. | Partial Care Days Per 1,000 CA Population | 79.65 | 59.63 | 35.29 | 18.14 | 33.47 | 83.41 |
| 92. | Avg. Days Per Partial Care Episode | 34.28 | 33.73 | 33.29 | 18.16 | 30.00 | 49.02 |
| | Outpatient Care | | | | | | |
| 93. | Outpatient Episodes Per 1,000 CA Population | 28.09 | 25.67 | 23.06 | 14.25 | 19.63 | 27.04 |
| 94. | Outpatient Visits Per 1,000 CA Population | 135.56 | 125.40 | 103.24 | 58.72 | 87.61 | 136.94 |
| 95. | Family & Group Visits As a Percent of Total Visits | 17.98 | 13.23 | 17.98 | 10.06 | 16.07 | 25.67 |
| | Patient Characteristics | | | | | | |
| 96. | Percent of Total Additions with Alcohol Disorders | 3.82 | 10.23 | 8.00 | 2.87 | 6.59 | 13.24 |
| 97. | Percent of Total Additions with Drug Disorders | 0.32 | 1.12 | 1.02 | 0.76 | 1.38 | 3.29 |
| 98. | Percent of Total Additions under 18 | 12.21 | 19.37 | 21.75 | 16.93 | 22.32 | 27.17 |
| 99. | Percent of Total Additions 65 and Over | 1.51 | 1.56 | 2.14 | 2.33 | 3.53 | 5.02 |
| 100. | Percent of Total Additions with Weekly Family Income under $100 | 43.15 | 50.42 | 44.06 | 43.35 | 51.91 | 61.96 |
| 101. | Percent of Total Additions with Grade School or Less Education | 18.25 | 27.67 | 27.16 | 24.80 | 32.87 | 42.52 |
| 102. | Percent of Total Additions Who Are Female | 56.82 | 51.97 | 54.65 | 48.23 | 53.13 | 56.37 |
| 103. | Percent of Total Additions Who Are Nonwhite | 2.42 | 2.84 | 4.56 | 3.31 | 10.20 | 24.32 |
| 106. | Percent of Total Additions Referred by Self, Family, Friend | 49.52 | 47.78 | 44.15 | 36.74 | 44.36 | 50.85 |
| 107. | Percent of Total Discharges Referred to Public Mental Hosp | 0.31 | 2.02 | 1.19 | 0.60 | 1.45 | 3.13 |
| 108. | Percent of Total Discharges Who Dropped Out of Program | 40.38 | 22.03 | 28.31 | 21.54 | 33.33 | 49.00 |

**Table 4. Sample Page From the 1976 Profile Report for the Adams County Mental Health Center**

# Chapter III

# EXAMPLES OF ACTUAL COST-OUTCOME AND COST-EFFECTIVENESS INFORMATION FROM THE ADAMS COUNTY MENTAL HEALTH CENTER

Chapter I described cost effectiveness as a buyer's guide for evaluating community mental health services. Chapter II described the implications of such a buyer's guide for CMHC decisionmakers, explaining how cost-effectiveness analysis can be defined in terms of a comparison between two or more cost-outcome statements, with such a comparison accomplished via a percentile-score model or a research model.

To implement a cost-effectiveness buyer's guide, therefore, a generic methodology is needed which produces cost-outcome statements. The present monograph is based upon a contract with NIMH to develop such a methodology and to pilot test it with treatment clients from the Adams County Mental Health Center during calendar year 1974. This chapter employs data from the pilot test to provide examples of the type of cost-outcome and cost-effectiveness information discussed in chapter II. (A technical description of the procedures used to generate this information is presented in chapters IV-VI and appendixes 3-6.)

One cautionary note is necessary. As readers proceed through the remainder of this chapter, it is most important for them to remember that the purposes of the data presented are to illustrate the cost-outcome and cost-effectiveness approach to CMHC evaluation and to suggest some rough base-rate figures from which to start such evaluations. Thus, these data should not in any way be interpreted as being precise estimates of base rates, either for the Adams Center or for any other center.

## Background: The Adams County Mental Health Center

Adams County, Colorado, the catchment area of the Adams Center, is northeast of Denver. The county comprises about 1,250 square miles and has a population of about 232,000. The county has a mixed economy, including farming, industrial activities (such as oil refining and trailer building), and sizable residential areas inhabited primarily by commuters to downtown Denver and other parts of the metro Denver area. Socioeconomically, the county is quite heterogeneous, with a median income level in the lower middle range. The 1970 ethnic composition of the county included 84 percent Anglo, 14 percent Chicano, 1 percent black, and 1 percent other.

The Adams County Mental Health Center is an independent, nonprofit corporation which is governed by a citizen board of directors and operated by an executive director. The center provides all five types of contact services, described on page 5, to the residents of its catchment area. Outpatient, consultation, and education services are provided by four decentralized Outpatient Teams, each of which is located in and provides services to a particular quadrant of the county. Inpatient, partial care, and after-hours emergency services, on the other hand, are centralized and provided by specialized teams serving the total county.

As of 1975, the center had a total annual core budget of about $1,600,000; a full-time staff of about 85; and a yearly roster of 4,000 clients. Total yearly client workload included about 25,000 units of outpatient and emergency services; and about 25,000 additional units of inpatient and partial care. The Adams Center is relatively typical of large, free-standing CMHCs nationally.

## Cost and Outcome Base Rates at the Adams Center for All Adolescent and Adult Treatment Clients as a Whole

The estimated 1974 average cost of services (to clients aged 14 and over) between admission and 3-month followup was $100. If the followup period is extended to 20 months, this figure rises to $200.

Figures 4 and 5 present estimates of the average outcome of services delivered between admission and 3-month followup and between admission and 20-month followup. Figure 4 presents information on 13 individ-

ual-functioning scales; and figure 5 presents parallel data on three summary-functioning scales. Two aspects of figures 4 and 5 require explanation for a full understanding of these data, and each of these aspects will be discussed below.

### The 16 Different Scales in Figures 4 and 5

Scales 1-13 in figure 4 are derived from our cost-effectiveness analysis of CMHC services, using the outcome dimensions listed in table 2.[1] The three summary scales in figure 5 each involve a particular integration of the 13 individual scales into a single summary scale. Each integration is based upon a different set of decisionmaker values[2], which were developed by the author for illustrative purposes. The weighting of the 13 scales used to derive each summary scale is presented in table 5. Briefly, the three summary scales include:

- *Team Leaders Summary Functioning*. The team leaders at the Adams Center were asked how much relative weight they would give to outcome on each of the 13 individual scales. As can be seen from table 5, the team leaders decided to weight all of the individual scales equally except independence from Welfare and from Mental Health Services, which are weighted zero.
- *Client-Oriented Summary Functioning*. Within the value system of many clinicians, it is more important to help a client in those areas which affect him or her most personally, intrapsychically, and socioemotionally. As can be seen from table 5, to reflect such a value system, a summary score was derived in which the highest weights were given to improvement in Social Adequacy, Emotional Comfort, and Adaptive Thinking; and the lowest weights, to improvement in the Productive Hours, Alcohol, Drug, Legal, Welfare, and Mental Health Service Scales.
- *Economy-Oriented Summary Functioning*. Within the value system of many health economists, legislators, government planners, etc., it is most important to help a client in those areas which have the clearest dollar payoff from an economic point of view. The Economy-Oriented Scale evaluates mental health services from society's point of view, as opposed to the client's intrapsychic point of view. Thus, the Economy-Oriented Scale reflects the reverse values of the Client-Centered Scale, as can be seen in table 5.

### The Meaning of the Scores in Figures 4 and 5

The scores in figures 4 and 5 are percentile scores, which were described on pp 14-17. These percentile scores are based on the estimated functioning of the total Adams County adolescent and adult community. Thus, if a certain score is at the 50th percentile, this indicates that 50 percent of the total county adolescent and adult population have a score equal to or lower than that score and 50 percent have a higher score. The scales are all tabulated so that higher percentiles indicate healthier functioning. Because the 50th percentile reflects the community average, the client scores on figure 4 and on all subsequent outcome exhibits are curtailed when they reach this point. This convention is adopted to reflect that a client under treatment is doing about as well as people in the community not under treatment. Thus, if the center achieves this level of functioning, it has restored the client to the community's average. The center may have actually improved the client's functioning above that level, but these figures do not concern themselves with gains made beyond this community average.

To illustrate the percentile scores, consider page 1 of figure 4. The first column shows a score of 36 percent. This indicates that, on the average, clients at admission to the Adams Center had a Productive Hours score which was equal to or higher than 36 percent of the community population as a whole, and thus lower than 64 percent of this population. In other words, on the average, clients at admission to the center are among the lowest third of the community in terms of the weekly number of hours they spend in such productive activities as job, school work, child care, housework, and volunteer work.

To help the reader in understanding the percentile scores, descriptive labels are suggested on the exhibits; e.g., scores at the second percentile are considered to indicate "severe impairment"; those at the 30th percentile, "mild impairment"; and those at the 70th percentile, "high-level functioning."

### Individual Scale Results in Figure 4

Among the various individual scales in figure 4 there is a wide variability in the admission level of functioning. Clients are functioning worst at admission on the Emotional Comfort and the Social Adequacy Scales, with scores at the 2nd and 14th percentiles, respectively. The score of 2 percent on Emotional Comfort places the average client at admission in the most distressed 2 percent of the catchment area population. This is consistent with the fact that, in any particular year, the Adams Center treats about 2 percent of the county's adolescent and adult population,

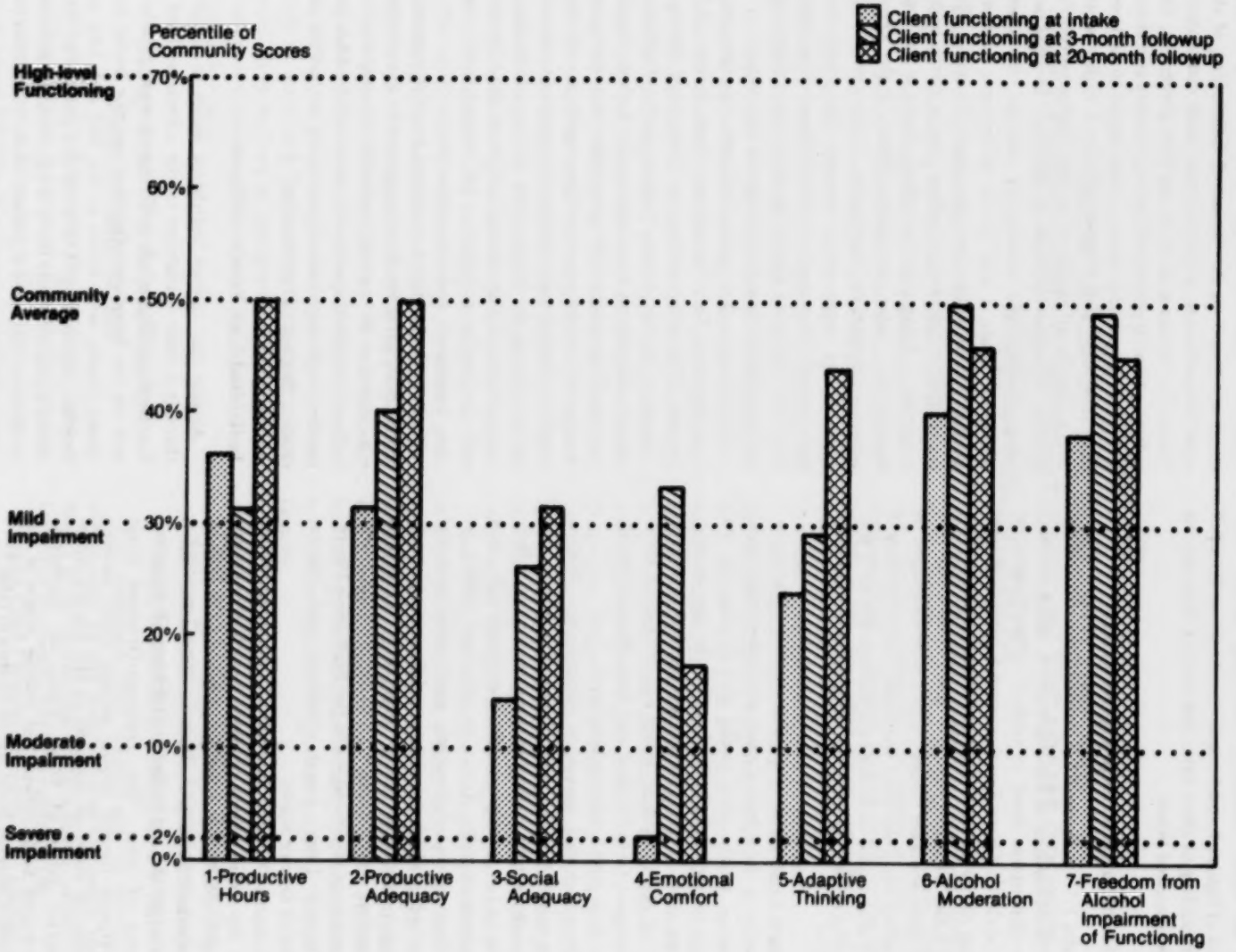


**Figure 4. Average outcomes for Adams Center adolescent and adult clients, scales 1-13 (cf. appendix 5 for technical details)**

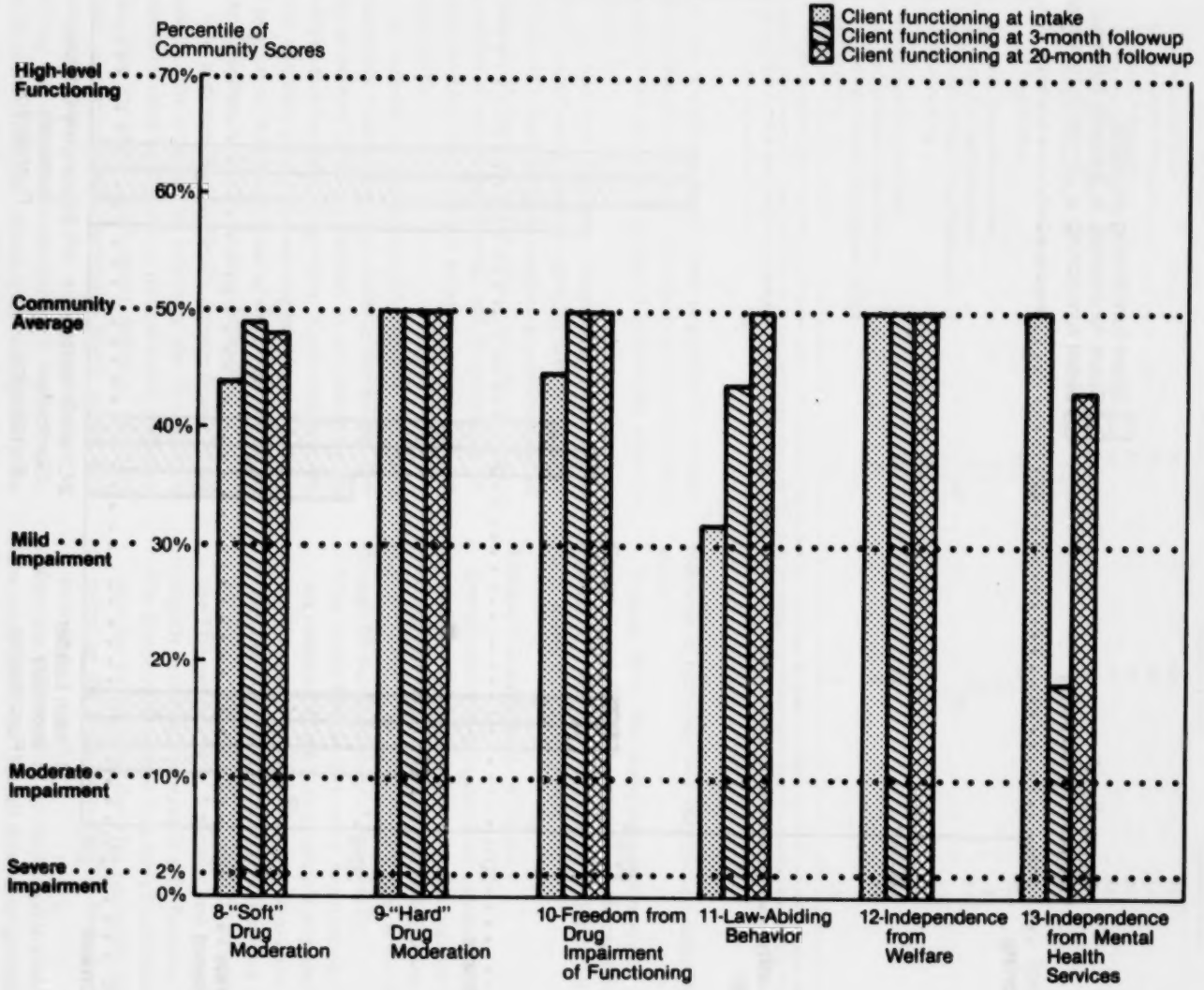


**Figure 4. Average outcomes for Adams Center adolescent and adult clients, scales 1-13 (cf. appendix 5 for technical details) (continued)**

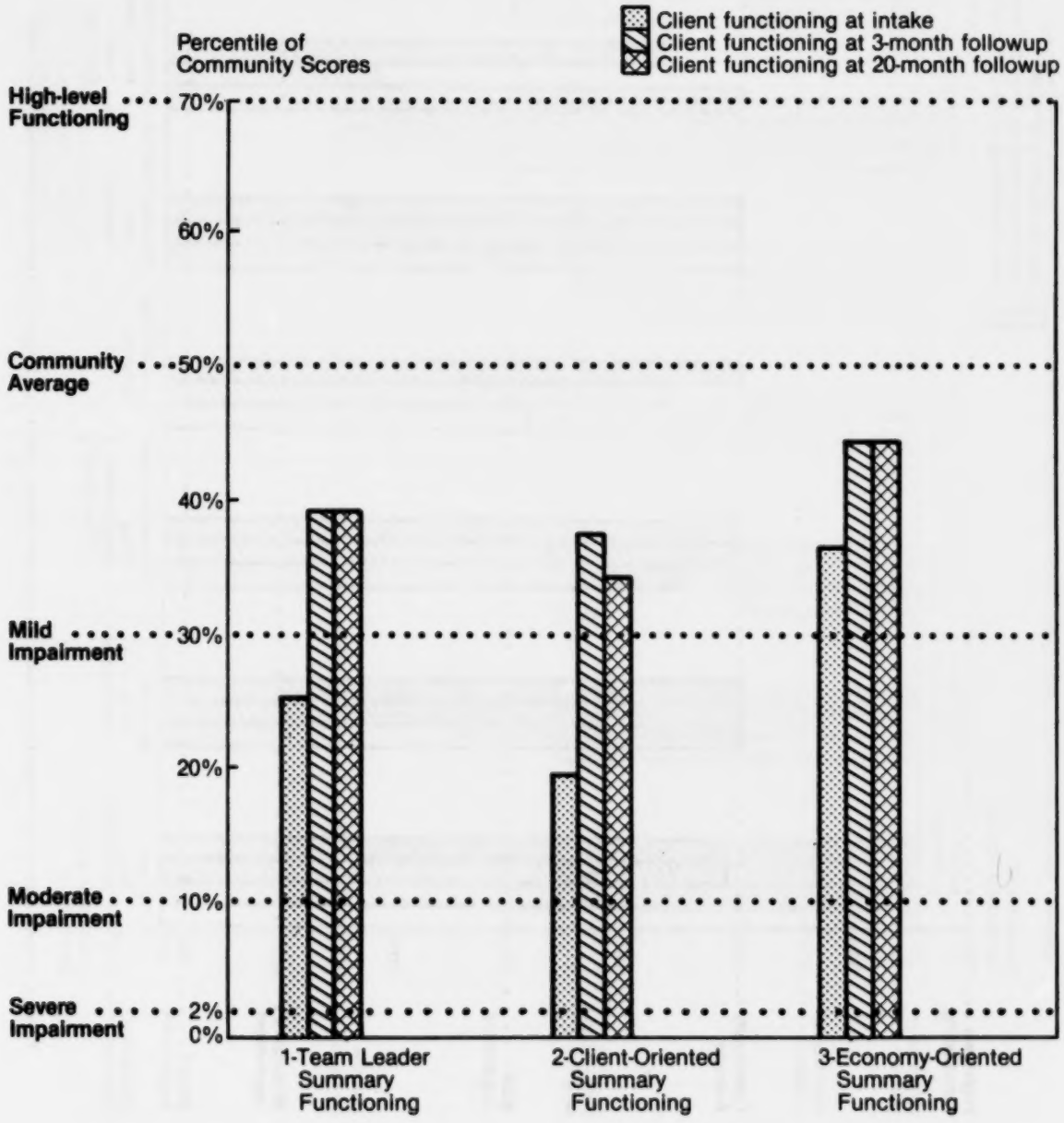


**Figure 5. Average outcomes for Adams Center adolescent and adult clients, summary scales (cf. appendix 5 for technical details)**

**Table 5. Weights Applied to the 13 Individual Scales in Figure 4 to Derive the Three Different Summary Scores in Figure 5**

| Individual Adolescent or Adult Scale | Weight Applied in Deriving the "Team Leaders" Summary Scale | Weight Applied in Deriving the "Client-Oriented" Summary Scale | Weight Applied in Deriving the "Economy-Oriented" Summary Scale |
|---|---|---|---|
| 1. Productive Hours | 50 * | 25 * | 75 * |
| 2. Productive Adequacy | 50 | 50 | 50 |
| 3. Social Adequacy | 50 | 75 | 25 |
| 4. Emotional Comfort | 50 | 75 | 25 |
| 5. Adaptive Thinking | 50 | 75 | 25 |
| 6. Alcohol Moderation | 7 | 4 | 11 |
| 7. Freedom from Alcohol Impairment of Functioning | 43 = 50 | 21 = 25 | 64 = 75 |
| 8. "Soft" Drug Moderation | 6 | 3 | 8 |
| 9. "Hard" Drug Moderation | 11 | 6 | 17 |
| 10. Freedom from Drug Impairment of Functioning | 33 = 50 | 16 = 25 | 50 = 75 |
| 11. Lawabiding Behavior | 50 | 25 | 75 |
| 12. Independence from Welfare | 0 | 0 | 75 |
| 13. Independence from Mental Health Services | 0 | 0 | 75 |

* These weights, which vary along a 75-point scale, were chosen by the author for illustrative purposes to reflect the three contrasting value orientations. Actual decisionmakers are not limited to this or any other particular scale. The only requirement of the methodology is that quantitative weights are assigned to different scales. (Note that, while many of the pairs of numbers in the last two rows add up to 100, this is a coincidence. It is not meant to reflect any interdependence between the two sets of weights.)

for one would expect the client population to include that group of catchment area residents who were most impaired on at least 1 of the 13 individuals scales in figure 4.

The fact that clients are functioning worst on the Emotional Comfort and Social Adequacy Scales is consistent with their primary presenting problems. At admission, 46 percent of the clients describe a primary problem of emotional distress, and 33 percent, a primary problem of conflict or isolation in their social relationships.

In contrast to the Emotional Comfort and Social Adequacy Scales, note that clients at the Adams Center show very little impairment at admission on the welfare and the three drug scales. Again, this is consistent with their primary presenting problems: Less than 3 percent of the clients came to the center with a primary problem of welfare or drug difficulties.

Also note the Mental Health Service Scale. At admission, the score is 50, reflecting the fact that the clients received practically no mental health services in the prior few weeks.[3] At 3-month followup, the client score on mental health services is lower, at the 18th percentile, which means that an average client is receiving one outpatient contact every 2 weeks. Finally, at 20-month followup, clients are receiving many fewer mental health services. Their score at the 43rd percentile indicates that an average client at 20-month followup is receiving one outpatient contact every 8 weeks.

In sum, then, the client population at the Adams Center has a distinctive pattern of characteristics at admission, a pattern which can be defined by the profile of scores shown in figure 4.

### Summary Scale Results in Figure 5

Overall outcome is in the three summary-functioning scales in figure 5. All three scales indicate sizable improvement in functioning between admission and 3-month followup, an improvement that is maintained through 20-month followup.[4] Specifically,

- On Team-Leader Summary Functioning, clients are admitted at the 25th percentile and improve to the 39th percentile at both 3 and 20 months.
- On Client-Oriented Summary Functioning, clients are admitted at the 19th percentile and improve to the 37th percentile at 3 months and then decline slightly to the 35th percentile at 20 months.
- On Economy-Oriented Summary Functioning, clients are admitted at the 37th percentile and improve to the 44th percentile at both 3 and 20 months.

Note the difference in the score levels among the three summary scales. For all three time periods—admission, 3-month followup, and 20-month followup—the lowest score is on the Client-Oriented Scale. This

reflects the fact that, in deriving this scale, the highest weights are assigned to the Social Adequacy, Emotional Comfort, and Adaptive Thinking individual scales; and these are the scales on which Adams Center clients were found at admission to be most disturbed. For a similar type of reason, scores on the Economy-Oriented Scale are the highest, since the scores which receive the most weight in deriving this scale are those on which Adams Center clients at admission are least disturbed.

While all three summary scales in figure 5 show positive improvement in functioning between admission and followup, the most improvement occurs on the Client-Oriented Scale; and the least improvement, on the Economy-Oriented Scale. This finding parallels the one described in the previous paragraphs. A possible interpretation of the two findings taken together is as follows:

- At admission, Adams Center clients manifest problems primarily in the areas which are most heavily weighted in the Client-Oriented Summary Scale, namely, Social Adequacy, Emotional Distress, and Adaptive Thinking. When the clients are seen in treatment at the center, the major focus is on their primary presenting problem. Thus, the most improvement these clients manifest is in the area of their presenting problem, as reflected in the most improvement occurring in the Client-Oriented Scale.

No matter what the reason for the finding that clients tend to show most improvement in the areas in which they are most impaired at admission (if this finding turns out to be a general one), the following guidelines could be set forth for decisionmakers:

- To the extent that the values employed to integrate individual scales into summary scales are correlated with the primary problems of the clients at admission, the clients will tend (other things being equal) to manifest the most improvement in their summary functioning.
- Likewise, if there is a discrepancy between a decisionmaker's values and the predominant types of primary presenting problems being seen at a center, the clients will tend (other things being equal) to manifest the least improvement in their summary functioning. For example, if the decisionmakers who fund the Adams Center were to adopt the Economy-Oriented set of values in evaluating the center's programs, these services would look considerably less effective than if the decisionmakers were to adopt the Client-Oriented set of values.

## Cost and Outcome Base Rates at the Adams Center for All Child Treatment Clients as a Whole

The cost-outcome data for clients under age 14 are separated from those for adolescents and adults because the child data employ different outcome dimensions and assessment procedures.

The estimated 1974 average cost of services delivered at the Adams Center to child clients between admission and 3-month followup was $141. No cost data were available beyond 3 months.

Child outcome data are presented in figure 6 and table 6. The format of these figures parallels that of the adults outcome data discussed in the previous section.[5] As in the adolescent and adult client data, there is much variability among individual child scales at admission. Particularly noteworthy are the large differences at admission between the Socialized Behavior and Self-Esteem Scales:

- On the Socialized Behavior Scales, the child clients have an average percentile admission score of .1, which therefore places them in the .1 percent of the catchment area child population which is most egocentrically aggressive, hyperactive, and antisocial in their behavior.
- On the Self-Esteem Scale, the child clients have an average percentile admission score of 9, which places them in the 9 percent of the catchment-area child population which is most socially withdrawn, sensitive, fearful, and otherwise inhibited.

Since .1 percent is much smaller than 9 percent, with respect to the community population, the child clients appear to be much more deviant in the area of aggression than in the area of inhibition. This contrasts with the adolescents and adults, whose primary area of most severe disturbance is emotional distress. The latter area is most comparable to the child area of self-esteem. In other words, the adolescent/adult clients are most disturbed in their personal feelings, while the child clients are most disturbed in their aggressive behavior toward others. This contrast might well be partly explained by the fact that many adolescent and adult clients are self-referred, and thus they would be more responsive to their inner feelings of distress. Almost all child clients, on the other hand, are referred at the initiative of adults, who are more likely to respond to aggressive behavior than to inhibited behavior.

It is noteworthy that, compared with adolescent/adult clients, child clients have much lower per-

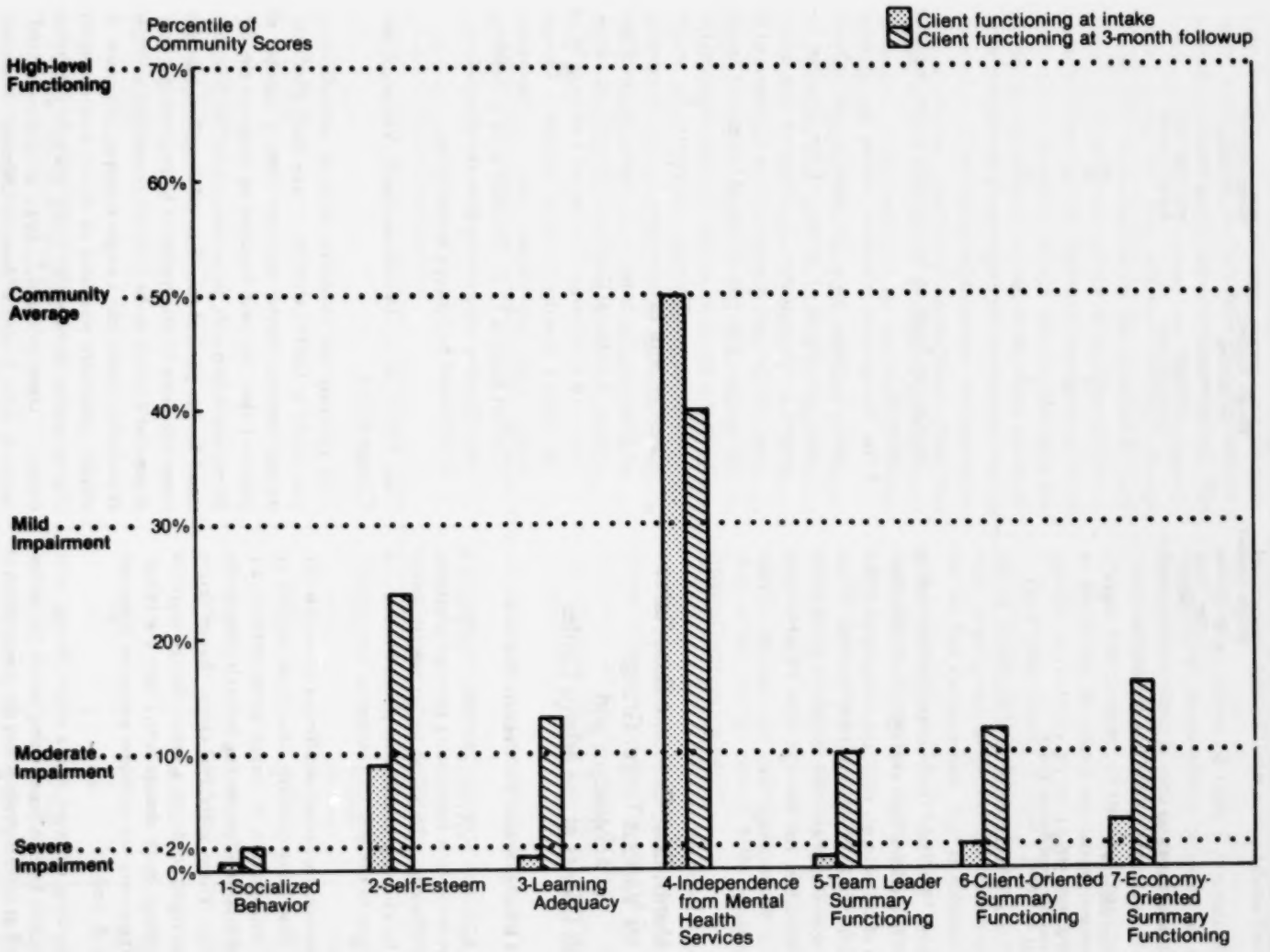


**Figure 6. Average outcomes for Adams Center child clients (cf. appendix 6 for technical details)**

Table 6. Weights Applied to the Four Individual Scales in Figure 6 to Derive the Three Summary Scales

| Individual Child Scale | Weight Applied in Deriving the "Team Leaders" Summary Scale | Weight Applied in Deriving the "Client-Oriented" Summary Scale | Weight Applied in Deriving the "Economy-Oriented" Summary Scale |
|---|---|---|---|
| 1. Socialized Behavior | 50 * | 50 * | 50 * |
| 2. Self-Esteem | 50 | 75 | 25 |
| 3. Learning Adequacy | 50 | 50 | 75 |
| 4. Independence from Mental Health Services | 0 | 0 | 75 |

* Cf. footnote in table 5.

centile scores. On the three summary-functioning scales, the child clients have average percentile admission scores of 2-5 percent, while the comparable scores for adolescent/adult clients are 19-37 percent. These percentile scores indicate that relative to peers in the general population, the average child client is more impaired in functioning than the average adolescent/adult client.

## Three-Month Cost-Outcome Base Rates for Various Target Groups of Adolescent and Adult Clients at the Adams Center

### The Use of Change Scores To Measure Outcome

Figures 4, 5, and 6 present outcome in terms of a comparison between a functioning score at admission and one at followup. This allows for an overall picture of clients' functioning at different points in time and in comparison to the general catchment area population.

In the present discussion, a different method is employed for describing outcome data. This method involves the computation of change scores between admission and followup functioning for each client in the target group. These individual-client change scores are then averaged to derive a mean change score for the target group. Such change scores have the following advantages over the outcome measures presented in figures 4, 5, and 6:

- Summarizing outcome into a single change score rather than by two functioning scores (at admission and at followup) simplifies the presentation of outcome base rates for large numbers of target groups.
- A change-score procedure allows the Consumer Satisfaction Scale to be included in the outcome measure.[6]
- The change-score procedure allows the decisionmaker to extend his or her values to take into account the degree of severity of the behavior involved in the outcome. To illustrate this procedure, for the cost-outcome data to be presented in this section, a Severity-Oriented Summary Change Score was generated so that the more impaired the functioning at admission, the greater the weight associated with improvement in that functioning at followup. For example, a client's improvement from an Emotional Comfort Score of 10 at admission to 19 at followup contributed a value of 90 to the client's Severity-Oriented Summary Change Score; while improvement from an Emotional Comfort Score of 31 at admission to 40 at followup contributed a value of only 60 to the client's Severity-Oriented Summary Change Score.

### The Effect of a Decisionmaker's Values Upon Change Scores

In applying the *Consumer Reports'* cost-effectiveness model to CMHC services, we saw that, after evaluating outcome service outcome from a number of points of view, we were required to integrate the different scores into a single measure of overall effectiveness.[7] Earlier parts of this chapter[8] described how this integration can be accomplished by employing a decisionmaker's values as the basis for combining multiple functioning scores into a single summary indicator. A similar procedure was used to derive four summary change scores: three scores which reflected the "team leader," "client-oriented," and "economy-oriented" values in table 5; and a "Severity-Oriented" Summary Change Score, which was described above.[9]

In sum, then, for each client in the study, individual functioning scores were integrated into four different

summary change scores, with each such score reflecting a different set of decisionmaker values. To investigate the effect of these different values upon the summary change scores, the four different scores were statistically analyzed by the intercorrelation method. The results of this analysis showed very high intercorrelations among the four different summary change scores. This means that clients who manifested a high degree of improvement on one of the scores almost always manifested a high degree of improvement on the other three. Similarly, clients who manifested a low degree of improvement on one of the scores almost always manifested a low degree of improvement on the other three. This finding indicates that the determination of whether a particular Adams Center client had a good or poor outcome did *not* depend upon the decisionmaker values built into the outcome-determination process.

These Adams Center data are presented for illustrative purposes only, and thus there is no implication of generality in the immediate finding that decisionmaker values did not substantially affect summary change scores. However, if this same finding were to consistently emerge in future studies it would be very encouraging, for it would mean that decisionmakers with different values concerning desirable change in client functioning could still in most cases agree on their interpretation of a particular set of cost-effectiveness data.

**The Format of Table 7: "Three-Month Cost-Outcome Base Rates for Various Target Groups of Adolescent and Adult Clients at the Adams Center"**

The first column of table 7 presents clinical and demographic characteristics collected on admission. Each characteristic is used to categorize the Adams Center adolescent and adult clients into various target groups. For example, on the first characteristic, Age at Admission, the clients are categorized into five age groups: 14-17; 18-24; 25-44; 45-64; and 65 or older.

The second column of table 7 presents the percentage of Adams Center clients who are categorized into each target group defined in the first column. Thus, for the first characteristic, Age at Admission, 17 percent of the clients are 14-17; 21 percent, 18-24; 45 percent, 25-44; 16 percent, 45-64; and 1 percent, 65 or older.

The third column presents the relative 3-month cost of services provided by the Adams Center to the target group defined in the first column. Each cost is categorized as low, medium, or high, based upon its relationship to the average cost of $100 per client for the Adams Center as a whole.[10]

The last column presents the relative outcome of services provided by the Adams Center to the target group defined in the first column.[11] Like cost, each outcome is categorized as low, medium, or high, based upon its relationship to the average outcome per client for the Adams Center as a whole.

**Table 7: Three-Month Cost-Outcome Base Rates for Various Target Groups of Adolescent and Adult Clients at the Adams Center[1]**

| CHARACTERISTIC WHICH DEFINES TARGET GROUP AT ADMISSION | PERCENT OF ADMISSIONS IN TARGET GROUP | RELATIVE COST OF SERVICES | RELATIVE OUTCOME OF SERVICES |
|---|---|---|---|
| *Demographic Characteristics* | | | |
| A. Age | | | |
| 1. 14-17 | 17% | Medium | Medium |
| 2. 18-24 | 21% | Medium | Medium |
| 3. 25-44 | 45% | Medium | Medium |
| 4. 45-64 | 16% | Medium | Medium |
| 5. 65- | 1% | NA[2] | NA |
| B. Sex: | | | |
| 1. Female | 51% | Medium | Medium |
| 2. Male | 49% | Medium | Medium |
| C. Ethnic Group: | | | |
| 1. Anglo | 84% | Medium | Medium |
| 2. Chicano | 14% | Medium | Medium |
| 3. Black | 1% | NA[2] | NA |
| 4. American Indian | .5% | NA | NA |
| 5. Other | .5% | NA | NA |
| D. Current Monthly Family Income: | | | |
| 1. 000 - $300 ($3,600 annual rate) | 21% | Medium | Medium |
| 2. 301 - $400 ($4,800 annual rate) | 15% | Medium | Medium |
| 3. 401 - $600 ($7,200 annual rate) | 19% | Medium | Medium |
| 4. 601 - $800 ($9,600 annual rate) | 15% | Medium | High |
| 5. 801 - $1,000 ($12,000 annual rate) | 16% | Medium | Low |
| 6. 1,001 - (above $12,000 annual rate) | 14% | Medium | Medium |

**Table 7: Three-Month Cost-Outcome Base Rates for Various Target Groups of Adolescent and Adult Clients at the Adams Center—Continued**

| CHARACTERISTIC WHICH DEFINES TARGET GROUP AT ADMISSION | PERCENT OF ADMISSIONS IN TARGET GROUP | RELATIVE COST OF SERVICES | RELATIVE OUTCOME OF SERVICES |
|---|---|---|---|
| E. Education (highest level completed): | | | |
| 1. No formal education | 1% | NA[a] | NA |
| 2. Between some elementary school and graduated junior high school | 14% | Medium | Medium |
| 3. Some high school | 28% | Medium | Medium |
| 4. Graduated high school (including vocational, business, or technical schools) | 38% | Medium | Medium |
| 5. Some college | 14% | Medium | Medium |
| 6. Between graduated college and completed postgrad or professional school | 5% | Medium | Medium |
| F. Occupation of Head of Household: | | | |
| 1. Unskilled worker | 26% | Medium | Medium |
| 2. Machine operator or other semi-skilled worker | 18% | Medium | Medium |
| 3. Skilled manual worker | 21% | Medium | Medium |
| 4. Clerical or sales worker; technician; or owner of small business under $6,000 | 11% | Medium | Medium |
| 5. Administrator; minor professional; or owner of small business between $6,000 and $35,000 | 17% | Medium | Medium |
| 6. Business manager or higher executive; "lesser" or "major" professional"; owner of medium or large business, over $35,000 | 7% | Medium | Medium |
| G. Marital Status: | | | |
| 1. Married: living together | 52% | Medium | High |
| 2. Married: separated | 19% | Medium | Medium |
| 3. Divorced | 8% | Medium | Medium |
| 4. Single | 19% | Medium | Low |
| 5. Widowed | 2% | NA[a] | NA |
| *Clinical Characteristics at Admission* | | | |
| H. Primary Diagnosis (American Psychiatric Association codes in parenthesis): | | | |
| 1. Psychosis (295.0 - 299.0) | 5% | Medium | Medium |
| 2. Anxiety Neurosis (300.0) | 27% | Low | Medium |
| 3. Depressive Neurosis (300.4) | 22% | High | High |
| 4. Personality Disorders (301.0 - 301.9) | 13% | High | Medium |
| 5. Alcoholism (303.0 - 303.9) | 14% | Low | Medium |
| 6. Adjustment Reactions of Adolescence of Adult Life (307.2 and 307.3) | 11% | Medium | Medium |
| 7. Behavior Disorders of Adolescence: Withdrawing Reaction or Runaway Reaction (308.1 and 308.3) | 5% | Medium | Low |
| 8. Other | 3% | NA[a] | NA |
| I. Primary Problem: | | | |
| 1. Thought Disorder | 5% | Medium | Low |
| 2. Emotional Distress: Anxiety and/or Depression | 41% | Medium | High |
| 3. Emotional Distress: Other | 5% | High | Medium |
| 4. Social Problems: Marital Discord | 19% | Medium | High |
| 5. Social Problems: Other | 14% | Medium | Medium |
| 6. Alcohol Abuse | 13% | Low | Medium |
| 7. Other | 3% | NA[a] | NA |
| J. Clinical Rating of Overall Functional Impairment | | | |
| 1. Mild | 43% | Medium | Medium |
| 2. Moderate | 50% | Medium | Medium |
| 3. Severe | 7% | Medium | Medium |
| K. Number of Previous Admissions | | | |
| 1. None | 84% | Medium | High |
| 2. One | 9% | Medium | High |
| 3. Two or more | 7% | Medium | Low |
| L. Previous Inpatient Care | | | |
| 1. No previous inpatient care | 82% | Medium | High |
| 2. Previous inpatient care | 18% | Medium | Low |
| M. Previous Partial Care | | | |
| 1. No previous partial care | 88% | Medium | High |
| 2. Previous partial care | 12% | Medium | Low |
| N. Previous Outpatient Care | | | |
| 1. No previous outpatient care | 61% | Medium | Medium |

**Table 7: Three-Month Cost-Outcome Base Rates for Various Target Groups of Adolescent and Adult Clients at the Adams Center[1]—Continued**

| CHARACTERISTIC WHICH DEFINES TARGET GROUP AT ADMISSION | PERCENT OF ADMISSIONS IN TARGET GROUP | RELATIVE COST OF SERVICES | RELATIVE OUTCOME OF SERVICES |
|---|---|---|---|
| 2. Previous outpatient care | 39% | Medium | Medium |
| *Referral and Disposition Characteristics* | | | |
| O. Primary Referral Source: | | | |
| 1. Self | 29% | Medium | Medium |
| 2. Family, friends, or other non-professionals (e.g. boss) | 15% | Medium | Medium |
| 3. Non-Agency Professionals (minister, private attorney, private MD, or private mental health professional) | 9% | Medium | Medium |
| 4. Alcohol abuse program | 5% | Medium | Medium |
| 5. Medical health agency | 6% | Medium | Medium |
| 6. Mental health agency other than the Adams Center | 7% | Medium | Medium |
| 7. Police, sheriff, courts, probation, or parole | 18% | Medium | Medium |
| 8. Public defender or legal aid | 6% | Medium | Medium |
| 9. Other (e.g., social services, vocational rehabilitation, or a voluntary service agency) | 5% | Medium | Medium |
| P. Legal Status at Admission: | | | |
| 1. Voluntary | 93% | Medium | Medium |
| 2. Nonvoluntary | 7% | Medium | Medium |
| Q. Type of Disposition After Intake Evaluation: | | | |
| 1. Inpatient or partial care services | 10% | High | Medium |
| 2. Outpatient services (81 percent of admissions) or "evaluation only" (9 percent of admissions) | 90% | Low | Medium |

[1] Cf. Appendix 7 for technical details.
[2] NA: Not available because too few target group clients in the pilot data precluded reliable estimates and cost outcome.

### The Relationship Between Cost Outcome and Selected Characteristics From Table 7.

The largest number of differences in cost outcome are associated with differential clinical characteristics (Items H-N) at admission. Two of the patterns which emerge:

- On both Primary Diagnosis and Primary Problem, both cost and outcome differ in a fairly complicated way, depending upon the type of disturbance or problem the client brings to treatment.
- The presence of Previous Admissions, Previous Inpatient Care, and Previous Partial Care are all associated with low outcome. All three of these variables suggest the chronicity of a client's problems, and it is not surprising that more chronic problems are harder to change.

Of the referral and disposition characteristics (Items O-Q), only one affects cost outcome: Disposition After Intake Evaluation. The finding is that clients who are assigned to inpatient or partial care after evaluation receive services whose cost is higher than the services received by those clients who are assigned to outpatient care or who are "evaluated only." This would be expected, since the rate per unit and total number of units of inpatient and partial care services are usually considerably higher than for outpatient services, and clients who are "evaluated only" are least costly to the center.

Overall, there are examples in table 7 of every type of relationship between client characteristics on the one hand, and cost and outcome on the other. These relationships include:

- No association between a client characteristic and either cost or outcome. An example of this type is characteristic A, Age.
- An association between a client characteristic and cost, but not between the client characteristic and outcome. An example of this type is characteristic Q, Disposition After Intake Evaluation.
- An association between a client characteristic and outcome, but not between the client characteristic and cost. An example of this type is characteristic G, Marital Status.
- An association between a client characteristic and both cost and outcome. An example of this type is characteristic H, Primary Diagnosis.

## Cost-Effectiveness Comparisons for Different Brands of Services Delivered to Adolescent and Adult Clients at the Adams Center

To illustrate the nature of cost-effectiveness data, results will be presented from three cost-effectiveness investigations conducted at the Adams County Mental Health Center, titled the Monitoring, Storefront, and

Random-Assignment studies. In each study, a sample from the same target group was employed. This target group includes all adolescent and adult clients at the Adams Center who are assigned at intake to outpatient care and comprises 81 percent of the total admissions to the Center.[12]

### The Format of Tables 8, 9, and 10: "Cost-Effectiveness Comparisons at the Adams Center"

The results of the Storefront, Monitoring, and Random Assignment studies are presented in tables 8, 9, and 10, respectively. Each exhibit is headed by three items:

- *The Target Group* being studied
- *The Followup Period* employed[13]
- *The Criteria Used to Justify the Assumption of Treatment Group Similarity.* The validity of a cost-effectiveness analysis of different brands of treatment is predicated upon the assumption that the clients treated by the different brands are similar to each other at the beginning of treatment in all the important ways that are associated with response to treatment.[14] This exhibit heading describes what criteria were used to justify the assumption that the groups of clients assigned to services A vs. B were in this sense similar at admission.

The format of the exhibit proper is designed after the decision table in figure 3:

- *The first column* is a sequential number of each comparison within a particular study.
- *The second and third columns* briefly describe the A and B services being compared.
- *The fourth column* indicates whether A services cost less, the same, or more than B services.
- *The fifth column* indicates whether A services are less effective, as effective, or more effective than B services.
- *The last column* indicates whether A or B services should be chosen on the basis of the cost and effectiveness comparisons.

### The Storefront Study: Table 8

This study was conducted before it was decided that the Adams Center would decentralize its outpatient services into four physically dispersed teams. In fact, the purpose of this study was to help in making this decision. At the time the study was conducted, there was one experimental outpatient team located in a storefront office in the one quadrant of the catchment area serving the population of that particular quadrant. All other clients were seen at the center's main office. The administration of the center believed that the storefront office had the advantages of offering greater accessibility of care to clients and of being more able to tailor its services to the needs of its subcatchment area. Thus, the administration was actively considering further decentralization. On the other hand, the administration was concerned that such a decentralization might result in less cost-effective services. For example, it was thought that clients might prefer the more professional-looking main office or that clinical supervision and peer review would be more difficult in a decentralized team, and therefore would detract from the effectiveness of the services, or that losing the efficiencies of centralization would cause increased costs. Therefore, the purpose of the Storefront study was to assess whether the cost effectiveness of the outpatient services delivered by the experimental storefront office was at least equal to that of the services delivered by the main office.

The results of the Storefront study presented in table 8 indicate that the storefront services were as cost effective as the main office services. This finding was thus helpful in removing the center administration's reservations about proceeding with county-wide decentralization.

**Table 8. Cost-Effectiveness Comparisons at the Adams Center—the Storefront Study[1]**

*Target Group*: All clients assigned at intake to outpatient services
*Followup Period*: 3 months
*Criteria Used to Justify the Assumption of Treatment Group Similarity*: The clients assigned to services A vs. B were analyzed on the types of demographic and clinical characteristics at admission listed in Table 7. This analysis yielded no differences between the two groups of clients.

| Comparison Number | A Services | B Services | Cost Comparison Between A & B | Effectiveness Comparison Between A & B | On the Basis of Cost and Effectiveness Choose: |
|---|---|---|---|---|---|
| 1. | *Storefront*: Outpatient services delivered in an experimental storefront office of the center. | *Main Office*: Outpatient services delivered in the main office of the center. | A costs same | A as effective | No Difference |

[1] Cf. Appendix B for technical details

## The Monitoring Study: Table 9

Based in part upon the Storefront study, in 1974, the Adams Center decentralized all outpatient services into four outpatient teams. Each team was located in a particular quadrant of the catchment area, and served all those clients living in its quadrant. Within each team, every client was assigned to a particular primary therapist. For purposes of the study, these therapists were categorized into two general groups:

- *High Training-Experience-Pay Therapists*: This group includes Ph.D. psychologists and masters-level social workers.[15]
- *Low Training-Experience-Pay Therapists*: This group includes "Diploma-graduate" nurses, paraprofessionals, and psychology interns.

The purpose of the Monitoring study was to assess whether the cost effectiveness of outpatient services delivered at the Adams Center was consistent across the different outpatient teams and across the two types of therapists. This assessment was accomplished by two comparisons:

- *Type of Therapist Comparison.* In this comparison, the treatment delivered by High Training-Experience-Pay Therapists was considered service A; and the treatment delivered by Low Training-Experience-Pay Therapists was considered service B.
- *Outpatient Team Comparison.* In this comparison, the treatment delivered by each outpatient team was considered a different "brand" of services.

The results of the Monitoring study are presented in table 9. As can be seen from the exhibit, the following were found:

- *Type of Therapist*: The higher the pay of a therapist, the higher the cost of a unit of outpatient service delivered by that therapist. In spite of this, table 9 indicates that the overall cost of treatment delivered by higher paid therapists was no more expensive than that delivered by lower paid therapists, thus indicating that the higher paid therapists tended to see their clients for a somewhat shorter total amount of time. In addition, the higher paid therapists achieved more effective results, making these therapists more cost effective than lower paid therapists.
- *Outpatient Teams*: There were no differences in the cost effectiveness of the three teams analyzed.

Assuming that decision factors other than cost-effectiveness considerations were equal and assuming that the present illustrative results in table 9 were consistently found in subsequent studies, a manager might make the following decisions on the basis of these results:

- *Type of Therapist*: Since therapists with higher training, experience, and pay were found to be more cost effective at 3-month followup, more of these therapists should be hired when new positions arise or old positions need to be refilled.[16]
- *Outpatient Teams*: Since all the teams were equally cost effective, no differential actions should be taken with any particular team. Thus, if the overall center level of cost effectiveness looks good, then *all* teams should be rewarded and praised; and if the overall center level looks bad, then *all* teams should be motivated and helped to improve.

**Table 9. Cost-Effectiveness Comparisons at the Adams Center—the Monitoring Study[1]**

*Target Group*: All clients assigned at intake to outpatient services
*Followup Period*: 3 months
*Criteria Used to Justify the Assumption of Treatment Group Similarity*: The clients assigned to A v. B were analyzed on average functioning at admission, as assessed by the three Summary-Functioning Scales described above. This analysis yielded no differences between the two groups of clients employed in comparison 1 below and no differences among the three groups of clients employed in comparisons 2-4 below. Since clients assigned to the Southeast team were significantly more impaired than those assigned to the other three teams, the Southeast team clients were excluded from the cost-effectiveness comparisons.

| Comparison Number | A Services | B Services | Cost Comparison Between A & B | Effectiveness Comparison Between A & B | On the Basis of Cost and Effectiveness Choose: |
|---|---|---|---|---|---|
| 1. | *High Training-Experience-Pay Therapist*: Treatment by a therapist with relatively high training, experience, and pay. | *Low Training-Experience-Pay Therapist*: Treatment by a therapist with relatively low training, experience, and pay. | A costs same | A more effective | Choose A |
| 2. | *Southwest Outpatient Team* | *Northwest Outpatient Team* | A costs same | A as effective | No Difference |
| 3. | *Southwest Outpatient Team* | *Northeast Outpatient Team* | A costs same | A as effective | No Difference |
| 4. | *Northwest Outpatient Team* | *Northeast Outpatient Team* | A costs same | A as effective | No Difference |

[1] Cf. Appendix 8 for technical details

## The Random Assignment Study: Table 10

The purpose of this study was to use the random assignment technique to assess the impact of a number of different factors upon the cost effectiveness of outpatient treatment at the Adams Center. These different factors include:

- *Type of Therapist*. Clients were randomly assigned to two groups of therapists.
  - *High Training - Experience - Pay Therapists*: This group included one very experienced psychiatrist, two very experienced Ph.D. psychologists, and two very experienced social workers. The annual salary of these therapists ranged from $16,000 to $32,000, and the average cost to the center for an hour of treatment by these therapists was $32.60.
  - *Low Training - Experience - Pay Therapists*: This group included one moderately experienced social worker, one moderately experienced nurse, one relatively inexperienced paraprofessional, and one relatively inexperienced masters-level psychology trainee. The annual salary of these therapists ranged from $6,000 to $14,000, and the average cost to the center for an hour of treatment by these therapists was $25.50.
- *Type of Intake*. The clients assigned to each therapist were in turn randomly assigned to one of three different types of intake interviews:
  - *Regular Intake*. In this type, the intake interview was conducted by a paraprofessional intake worker who was not one of the nine therapists in the study. After the intake interview, the worker told the client that he or she would be contacted by another clinician for a first therapy interview. The therapist was then given the client's name and usually telephoned the client within a few days to set up an interview.
  - *Introduction Intake*. In this type, the intake interview was again conducted by the paraprofessional intake worker. However, at the end of the interview, the client was introduced in person to the therapist, and at that time, the therapist arranged with the client for the first therapy interview.
  - *Triage Intake*. In this type, the intake interview itself was conducted by the therapist. Thus, the intake interview and the first therapy interview were one and the same.

**Table 10. Cost-Effectiveness Comparisons at the Adams Center—the Random Assignment Study [1]**

*Target Group*: All clients assigned at intake to outpatient services
*Followup Period*: 20 months
*Criteria Used to Justify the Assumption of Treatment Group Similarity*: For each of comparisons 1-6 below, the two groups of clients treated by services A vs. B were randomly assigned to these services. Such random assignment is one of the most rigorous methods for insuring that no systematic differences exist between the two groups at admission.

| Comparison Number | A Services | B Services | Cost Comparison Between A & B | Effectiveness Comparison Between A & B | On the Basis of Cost and Effectiveness Choose: |
|---|---|---|---|---|---|
| 1. | *High Training-Experience-Pay Therapist*: Treatment by a therapist with relatively high training, experience, and pay. | *Low Training-Experience-Pay Therapist*: Treatment by a therapist with relatively low training, experience, and pay. | A costs same | A as effective | No Difference |
| 2. | *Regular Intake*: First interview with an intake worker only. | *Introduction Intake*: First interview with an intake worker plus an introduction to the therapist. | A costs same | A as effective | No Difference |
| 3. | *Regular Intake* | *Triage Intake*: First interview with the therapist no intake worker. | A costs less | A as effective | Choose Regular Intake |
| 4. | *Introduction Intake* | *Triage Intake* | A costs same | A as effective | No Difference |
| 5. | *Incentive*: Therapist given a specific external incentive for a client's positive outcome. | *No Incentive*: Therapist given no specific external incentive for a client's positive outcome. | A costs same | A more effective | Choose Incentive |
| 6. | *Specialization*: Therapist rates client as one in which he or she specializes. | *Nonspecialization*: Therapist rates client as one in which he or she does *not* specialize. | A costs same | A as effective | No Difference |

[1] Cf. Appendix 8 for technical details

- *Therapist Incentive*. The clients assigned to each therapist were also randomly assigned to one of two incentive conditions:
  - *Incentive Clients*. For these clients, the therapist was told that he or she would be given a specific bonus—either time off or extra pay—if the client's outcome was above average.
  - *No Incentive Clients*. For these clients, the therapist was told that he or she would *not* be given a specific bonus if the client's outcome was above average.
- *Specialization*. After the first interview with each client, the therapist rated the degree to which the client matched the type of individual in whom the therapist specialized, i.e., the type of individual with whom the therapist felt he or she could be most successful. On the basis of these ratings, clients were then placed into one of two categories:
  - *Specialization Clients*. These included that half of the clients who attained the highest specialization ratings.
  - *Nonspecialization Clients*. These included the other half of the clients.

The results of the Random Assignment study are presented in table 10 and can be summarized as follows:

- From comparison 1, it can be seen that there was no difference in the cost or effectiveness of the High Training-Experience-Pay therapists and the Low Training-Experience-Pay therapists. (Note that, as in the Monitoring study, the finding of no difference in cost of treatment between the two groups of therapists indicates that the higher paid therapists tended to see their clients for a shorter amount of time, thus canceling out the fact that these therapists were 27 percent more costly per hour to the center.)
- From comparisons 2-4, it can be seen that the Triage Intake was less cost effective than the Regular Intake, with the Introduction Intake falling in the middle.
- From comparison 5, it can be seen that the Incen-

tive condition was more cost effective than the No Incentive condition.

- From comparison 6, it can be seen that the Nonspecialization condition was just as cost effective as the Specialization condition.

Assuming that decision factors other than cost-effectiveness considerations were equal, and assuming that the present illustrative results in table 10 were consistently found in subsequent studies, a manager might make the following decisions on the basis of these results:

- *Type of Therapist*: Since therapists with both high and low training, experience, and pay were found to be equally cost effective at 20-months followup, no changes in the present staff pattern are warranted.[17]
- *Type of Intake*. Triage Intakes, because they were less cost-effective than the other two types, should be discontinued and replaced with one or both of the other two types.
- *Therapist Incentive*. Since the Incentive condition was more cost effective than the Nonincentive condition, incentive systems on an ongoing or at least a periodic basis should be instituted, so that therapists are given bonuses for above-average client outcome. Such an incentive system is only fair, of course, where random assignment is used; for when clients are randomly assigned, each therapist receives a similar group of clients, and thus each therapist has an equal chance of success.
- *Specialization*. Since cost effectiveness was not associated with the degree to which a client matched the therapist's specialization, routine random assignment of clients could be instituted with no loss of treatment efficiency or effectiveness. As just mentioned, such random assignment has the administrative advantage that each therapist receives a comparable group of clients, and thus the performance of different therapists can be assessed by cost-effectiveness analysis.

# Part 2. The D*A*R*E Information System for Implementing Cost-Effectiveness Analysis

*Audience*: Part 2 is intended for thorough reading by individuals who have extensive technical involvement in the day-to-day administration and evaluation of CMHC services, e.g., governmental and agency program evaluators, accountants, business managers and computer analysts.

Part 2 is also intended for summary reading by individuals with a moderate technical involvement in the day-to-day administration and evaluation of CMHC services, e.g., agency directors and governmental health planners.

*Content*: Chapter IV outlines the D*A*R*E data system, which was specially developed to implement cost-effectiveness analysis, in addition to providing other CMHC management information.

Chapter V describes D*A*R*E's approach to the cost component of cost-effectiveness analysis.

Chapter VI describes D*A*R*E's approach to the effectiveness component.

# Chapter IV
# OVERVIEW OF THE D*A*R*E INFORMATION SYSTEM

Chapters I-III described cost effectiveness as a buyer's guide for evaluating CMHC services and discussed a variety of ways in which the guide can be employed in decisionmaking. Chapters IV-VI deal with the implementation of cost-effectiveness evaluation by presenting an overview of a specially developed, generic management information system (MIS) for conducting such analyses. The methodology has been named the *D*ata for *A*ccounting, *R*ecords, and *E*valuation system (D*A*R*E). Chapter IV presents an overview of the D*A*R*E system; chapter V focuses on the system's approach to the cost component of cost-effectiveness evaluation; and chapter VI focuses on the system's approach to the effectiveness component.

## Outline of the Evaluation Steps Necessary for a Mental Health Cost-Effectiveness Analysis

In chapter I, figure 1 and the accompanying text and appendix 2 outline how a CMHC's services work to help target groups of clients in its catchment area. Figure 7 expands on these exhibits to outline the comparison of two representative samples of Target Group X who each receive different brands of CMHC services. The upper half of the figure outlines the structure of service delivery to two representative samples of the same type of client, e.g., adult schizophrenics, who are called "Target Group X." One group receives Brand A CMHC services and is labeled "Target Group Xa." The other group receives Brand B and is labeled "Target Group Xb." The figure outlines a situation in which each of the groups simultaneously receives services, as follows: At Time 1, the groups are admitted to the CMHC, manifesting certain levels of functioning; during Time 2, each group receives a particular brand of services; and at predetermined Time 3 (e.g., 3 months after admission) the groups manifest new levels of functioning.

The lower half of the figure outlines 10 evaluation steps that are required to compare the relative cost effectiveness of the services rendered to Target Groups Xa and Xb. Evaluation Steps A through G focus on deriving the cost and outcome of the services delivered to *each* of the groups. In Steps H, I, and J, the costs and outcomes of the two groups are compared and summarized in the decision table presented in figure 3.

More specifically, at Time 1, Evaluation Step A determines which clients belong to Target Group X. All members of the representative sample are then assessed in terms of their preservice functioning using the methodology of Evaluation Step B. At Time 2, Evaluation Step C involves the recording of each type of service contact delivered to each individual in Target Groups Xa and Xb, i.e., the number of inpatient days, outpatient hours, emergency visits, etc., delivered to each individual. (A systematic procedure for defining the relevant types of services is to derive an "Organizational Matrix" for each agency involved in the comparison. This procedure is discussed below in chapter V, p. 44.)

At Time 3, the postservice functioning of the members of Target Groups Xa and Xb is first assessed via Step D. The change between preservice and postservice functioning yields the outcome of services via Step E. Two fiscal procedures follow. Step F, unit cost-finding, involves deriving a unit cost for each type of service across all clients of the CMHC, e.g., the cost per inpatient day, per outpatient hour, or per emergency visit. Unit cost for a particular type of service is calculated by taking the total expenses of the center over a particular time period and dividing by the total number of units of that service delivered over the same period. Step G, target group cost-determination, involves the application of the CMHC's unit costs to the contact workload recorded during Time 2 for each member of Target Groups Xa and Xb. For example, if a target group member receives 2 inpatient days and 10 outpatient hours, and the unit costs are $80 per inpatient day and $30 per outpatient hour, then the client's total service cost is $460.

At Time 4 the outcome data (from Step E) and the cost data (from Step G) for the two target groups are systematically compared. In Step H, the cost of A services is compared with the cost of B to determine

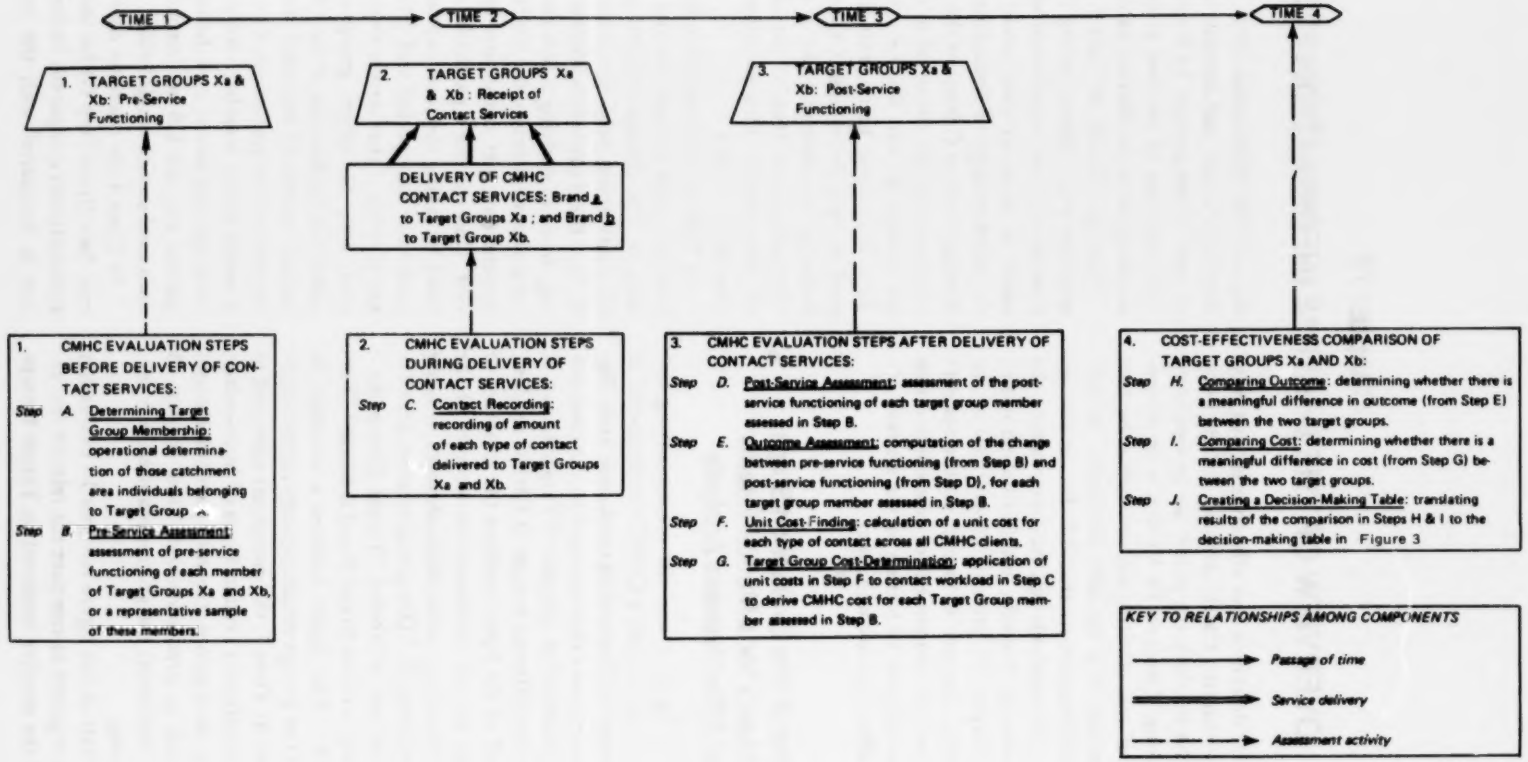
TIME 1
TIME 2
TIME 3
TIME 4
1. TARGET GROUPS Xa & Xb: Pre-Service Functioning
2. TARGET GROUPS Xa & Xb : Receipt of Contact Services
3. TARGET GROUPS Xa & Xb: Post-Service Functioning
DELIVERY OF CMHC CONTACT SERVICES: Brand a to Target Groups Xa ; and Brand b to Target Group Xb.
1. CMHC EVALUATION STEPS BEFORE DELIVERY OF CONTACT SERVICES:
Step A. Determining Target Group Membership: operational determination of those catchment area individuals belonging to Target Group a.
Step B. Pre-Service Assessment: assessment of pre-service functioning of each member of Target Groups Xa and Xb, or a representative sample of these members.
2. CMHC EVALUATION STEPS DURING DELIVERY OF CONTACT SERVICES:
Step C. Contact Recording: recording of amount of each type of contact delivered to Target Groups Xa and Xb.
3. CMHC EVALUATION STEPS AFTER DELIVERY OF CONTACT SERVICES:
Step D. Post-Service Assessment: assessment of the post-service functioning of each target group member assessed in Step B.
Step E. Outcome Assessment: computation of the change between pre-service functioning (from Step B) and post-service functioning (from Step D), for each target group member assessed in Step B.
Step F. Unit Cost-Finding: calculation of a unit cost for each type of contact across all CMHC clients.
Step G. Target Group Cost-Determination: application of unit costs in Step F to contact workload in Step C to derive CMHC cost for each Target Group member assessed in Step B.
4. COST-EFFECTIVENESS COMPARISON OF TARGET GROUPS Xa AND Xb:
Step H. Comparing Outcome: determining whether there is a meaningful difference in outcome (from Step E) between the two target groups.
Step I. Comparing Cost: determining whether there is a meaningful difference in cost (from Step G) between the two target groups.
Step J. Creating a Decision-Making Table: translating results of the comparison in Steps H & I to the decision-making table in Figure 3
KEY TO RELATIONSHIPS AMONG COMPONENTS
Passage of time
Service delivery
Assessment activity

**Figure 7. Evaluation steps required to perform a cost-effectiveness comparison between target groups Xa and Xb**

whether there is a "meaningful" difference between them. Difference can be defined in several ways, e.g., by defining a specific number of percentile points as meaningful, or by defining a statistically significant difference as meaningful. Step I follows a similar logic to determine whether there is a "meaningful" difference in outcome between A and B services. In Step J, the cost and outcome comparisons between the two target groups are summarized in a cost-effectiveness decisionmaking table.

For a management information system which performs Steps A-J above to be most useful to a CMHC, the system must conform to other general criteria which have been elaborated elsewhere (e.g., Chapman 1976; Cooper 1973; Hagedorn, Beck, Neubert, and Werlin 1976; Smith and Sorensen 1974; and Ciarlo and Reihman 1974). These criteria, which are described in appendix 2, include: (a) capacity for computerization; (b) cost efficiency; (c) simplicity; (d) nonintrusiveness into ongoing clinical activities; (e) compatibility with the management information systems of other CMHCs; (f) capacity to perform other management and clinical recordkeeping functions, such as staff time allocations, billing, documentation of contacts, accounting, analysis of client characteristics, and workload summaries; (g) compatibility with Federal, State, and local data requirements; (h) flexibility for change; (i) modular construction so that adoption can be done in time-stepped phases; and (j) neutrality for treatment theory.

## Design of the D*A*R*E Information System

To demonstrate that a CMHC management information system can be designed both to perform the cost-effectiveness steps in figure 7 and to conform to the other MIS criteria, a computerized MIS was developed for the Adams Center. This system is called the Data for Accounting, Records, and Evaluation System (D*A*R*E). Figure 8 presents a flowchart which illustrates the overall structure of the D*A*R*E system and outlines how it accomplishes the cost-effectiveness steps. The system is viewed as a matrix generated by two dimensions: (a) the usual types of data included in a CMHC's MIS (client characteristics, client contacts, personnel payroll and other accounting transactions, service costs, and client outcome); and (b) the usual sequential stages in data processing (input forms, data storage files, and output reports).[1] Table 11 describes some of the details for how the flowchart in figure 8 accomplishes the cost-effectiveness steps in figure 7.

The D*A*R*E system consists of two subsystems. One handles statistical and financial information (the first five types of data in figure 7); and the other handles client-outcome information. The statistical/financial information is collected for all clinical and financial transactions at the center and is employed to perform cost-effectiveness steps A, C, F, G, and I in figure 7.

The client-outcome subsystem is used to perform cost-effectiveness steps B, D, E, and H in the figure. Client outcome is only assessed on groups of clients explicitly designated for cost-effectiveness evaluation. For adults, who were the focus of the pilot studies presented in chapter III, client outcome data consist of scores generated by a specially designed interview schedule which is administered both pre- and postservice by clinically trained research interviewers. This interview, which averages about 40 minutes to administer, is described in chapter VI.

The D*A*R*E system was implemented as the management information system of the Adams Center. This took place in two major steps. First, the center's previous manual management information system was revised and reorganized so that it conformed to the logic and structure of the D*A*R*E system. Next, the revised manual system was computerized, employing RPG as the program language and the county's IBM System 3/Model 15 computer for hardware.

Once in operation, D*A*R*E's statistical/financial subsystem required 2,800 source documents a month to record all of the Adams Center's statistical and financial data, with an average charge of $.44 to code and keypunch each document. To process, store, and produce output reports from these data required about 10 hours of computer time per month, at $50 an hour. These expenses, plus annual file updating and archiving, averaged a total of $22,000 a year for full running of the statistical/financial subsystem, or 1.4 percent of the center's total $1.6 million budget.

Most of the cost in implementing D*A*R*E's client-outcome subsystem went into interview administration. Determining treatment outcome for the clients in the pilot studies described in tables 8, 9, and 10 involved preservice interviews with one group of 201 representative center clients, of whom 156 (78 percent) were reached and re-interviewed at 3-month followup; and preservice interviews with a second representative group of 219, of whom 134 (61 percent) were reached and re-interviewed at 20-month followup. These interviews were contracted out to masters-level clinical interviewers, at a cost of $28 per completed interview, for a total expense of $19,880. In addition to the actual interviewing time, this cost covered all time involved in interviewer training, quality control, coordination, and recontacting clients at followup.

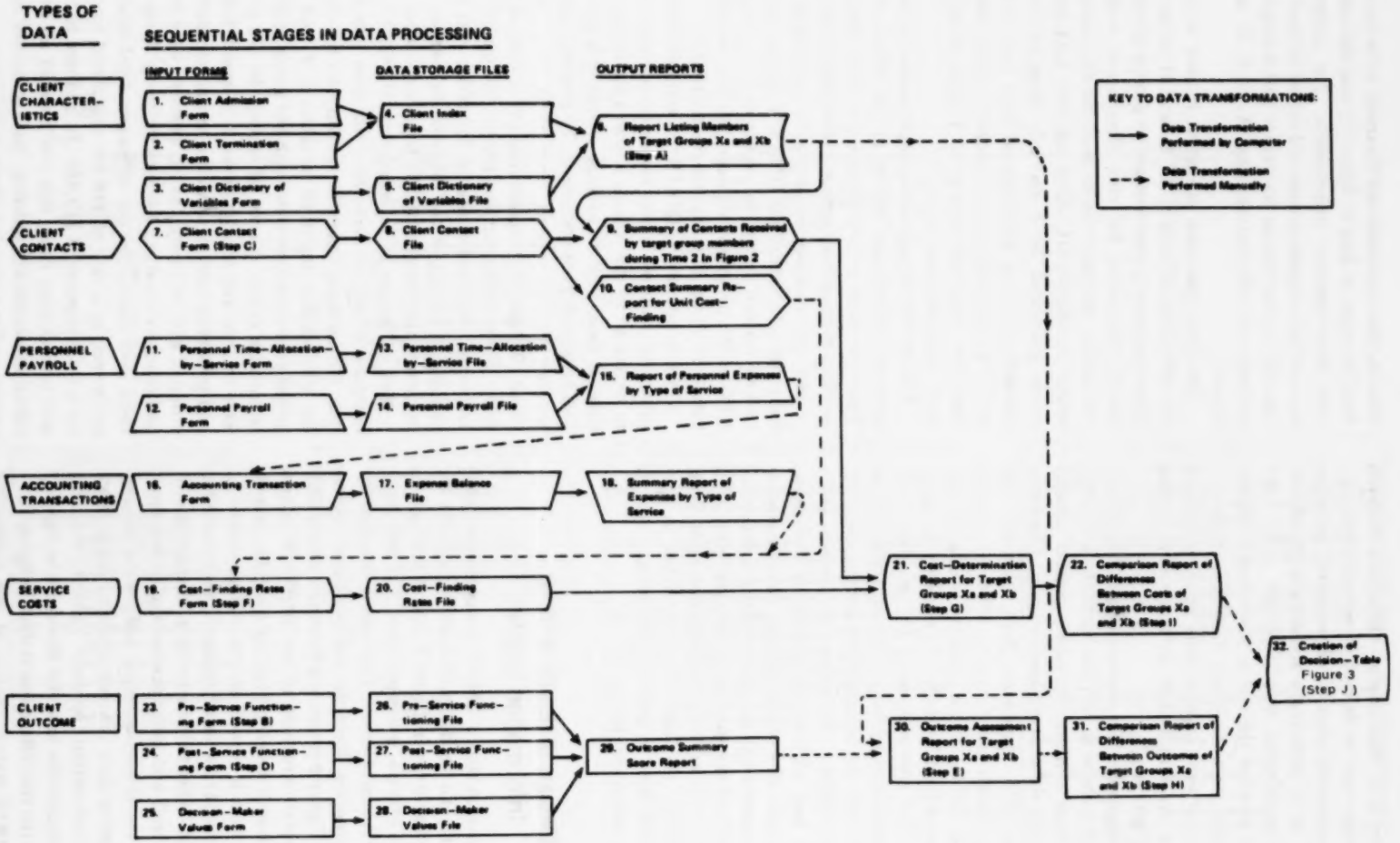
TYPES OF DATA
SEQUENTIAL STAGES IN DATA PROCESSING
INPUT FORMS
DATA STORAGE FILES
OUTPUT REPORTS
CLIENT CHARACTERISTICS
1. Client Admission Form
2. Client Termination Form
3. Client Dictionary of Variables Form
4. Client Index File
5. Client Dictionary of Variables File
6. Report Listing Members of Target Groups Xa and Xb (Step A)
CLIENT CONTACTS
7. Client Contact Form (Step C)
8. Client Contact File
9. Summary of Contacts Received by target group members during Time 2 in Figure 2
10. Contact Summary Report for Unit Cost-Finding
PERSONNEL PAYROLL
11. Personnel Time-Allocation-by-Service Form
12. Personnel Payroll Form
13. Personnel Time-Allocation by-Service File
14. Personnel Payroll File
15. Report of Personnel Expenses by Type of Service
ACCOUNTING TRANSACTIONS
16. Accounting Transaction Form
17. Expense Balance File
18. Summary Report of Expenses by Type of Service
SERVICE COSTS
19. Cost-Finding Rates Form (Step F)
20. Cost-Finding Rates File
21. Cost-Determination Report for Target Groups Xa and Xb (Step G)
22. Comparison Report of Differences Between Costs of Target Groups Xa and Xb (Step I)
32. Creation of Decision-Table Figure 3 (Step J)
CLIENT OUTCOME
23. Pre-Service Functioning Form (Step B)
24. Post-Service Functioning Form (Step D)
25. Decision-Maker Values Form
26. Pre-Service Functioning File
27. Post-Service Functioning File
28. Decision-Maker Values File
29. Outcome Summary Score Report
30. Outcome Assessment Report for Target Groups Xa and Xb (Step E)
31. Comparison Report of Differences Between Outcomes of Target Groups Xa and Xb (Step H)
KEY TO DATA TRANSFORMATIONS:
Data Transformation Performed by Computer
Data Transformation Performed Manually

**Figure 8. Flowchart of how the D*A*R*E system performs the cost-effectiveness analysis in figure 7**

**Table 11. How the Flowchart in Figure 8 Accomplishes the Evaluation Steps in Figure 7.**

| Evaluation Step in Figure 7 Which is Accomplished | Flowchart Boxes in Figure 8 | Description |
|---|---|---|
| Step A | 1-6 | Client characteristics at admission are recorded (Box 1) and filed (Box 4). From a "Dictionary" of all the client variables in the D*A*R*E System (Boxes 3 and 5), the user defines the characteristics of Target Groups Xa and Xb, and a listout of the group members is generated (Box 6). |
| Step C | 7-10 | All service contacts with clients are recorded (Box 7) and filed (Box 8). The file is then used to generate: (a) Box 9, which summarizes the amounts of each type of contact received by target group members over the period of "Time 2" in figure 2; and (b) Box 10, which summarizes the contacts of all clients over a fiscal year (or some other pre-specified period of time). |
| | 11-18 | Personnel time-allocation-by-service data and personnel payroll data are collected (Boxes 11 and 12) and stored (Boxes 13 and 14). These two types of data are then combined to produce a report of personnel expenses by type of service (Box 15). This information is combined with other expense transactions via Box 16 as the input into the center's basic expense files (Box 17). These files are then analyzed to yield a report of cumulative center expenses by type of service (Box 18). |
| Step F | 19-20 | For each type of contact, the total expenses for the contacts over the fiscal year (from Box 18) are divided by the total number of contacts over the year (from Box 10) to yield the unit cost per contact. These unit costs are then recorded (Box 19) and filed (Box 20). |
| Step G<br>Step I | 21-22 | Applying the unit cost rates in Box 20 to the contacts "consumed" by each member of Target Groups Xa and Xb (Box 9) yields the cost of services during "Time 2" for each member (Box 21). Comparison of the costs of the members of the two groups then indicates whether the difference between the two groups is "meaningful" on some predefined criterion (Box 22). |
| Step B<br>Step D | 23-29 | Multidimensional assessment of functioning (cf. table 1, Step 3) is performed for all clients, or some sample of them, at both Time 1 (Pre-Service) and at Time 3 (Post-Service). The results are then recorded (Boxes 23 and 24) and filed (Boxes 26-27). From these files, weighted change (outcome) scores are calculated (Box 29). Weighting is performed via Boxes 25 and 28 in terms of the relative values the designated decisionmaker places upon the various types of reductions in client impairment (cf. table 1, Step 5). |
| Step E<br>Step H | 30-31 | Via the list of target group members in Box 6, and the weighted outcome scores in Box 29, a weighted outcome score for each target group member is selected (Box 30). Comparison of these scores then indicates whether the difference between them is "meaningful" on some predefined criterion (Box 31). |
| Step J | 32 | The comparisons in Boxes 22 and 31 are used to create Box 32, which consists of a decisionmaking table like the one presented in Figure 1. |

# Chapter V

# THE D*A*R*E SYSTEM'S APPROACH TO COST FINDING

As can be seen from figure 7, a crucial part of assessing the cost of mental health services is the process known as "cost finding," which involves calculation of the cost for a standard unit of a particular type of service at a particular center or group of centers. The present chapter begins by explaining how the structure of any CMHC can be represented by an "Organizational Matrix" and then goes on to show how such a matrix can be employed to facilitate the cost-finding process.

## The Organizational Matrix of a CMHC

As described in chapter I, a CMHC can be viewed as an organization which provides an integrated set of comprehensive mental health services. The product of these services are contacts (either face-to-face, by phone, or by letter) between one or more staff members of the center who are in a "giving help" role and one or more members of the community who are in a "receiving help" role. The delivery of these contacts necessitates certain support activities, such as clinical recordkeeping, clinical supervision, building maintenance, etc. Thus, a CMHC can be viewed as a coordinated collection of contact and support activities. These activities can be conceptually structured in terms of an "Organizational Matrix" generated by three dimensions: Generic Service Elements, Center Divisions, and Generic Target Groups.

The Generic Service Elements of a CMHC are based upon its services which have been defined in a manner which is standardized across different agencies—regionwide, statewide, nationwide, etc. For the pilot test, nine services were chosen which represented NIMH's generic CMHC typology at the time the D*A*R*E System was being developed. These services are defined as follows:

*Contact Services:* These consist of activities which are directly associated with the production of contacts. For purposes of finding the cost of a unit of each particular type of contact (cost finding), these activities can be subdivided into two categories: activities with discipline-variable expenses vs. those with discipline-fixed expenses. Activities with discipline-variable expenses are those with expenses which vary from contact to contact as the discipline of the clinician delivering the contact varies. On the other hand, activities with discipline-fixed expenses are those with expenses which remain constant, no matter what the discipline of the delivering clinician is. Generally, the following types of Contact Service activities fall into each of these categories:

- Activities Involving Discipline-Variable Expenses:
  - Actual contacts
  - Travel to and from contacts
  - Planning for, scheduling, and recordkeeping about contacts which are specifically done by the clinician providing the contacts
  - Time spent in supervision by a clinician about the specific contacts he provides
- Activities Involving Discipline-Fixed Expenses:
  - Receptionist functions of greeting clients and answering phone calls when clinicians are not available
  - Clerical functions, such as typing and filing contact records and general correspondence
  - Administrative activities directly associated with scheduling and coordinating large numbers of contacts provided by multiple clinicians

There are five specific Contact Services, one for each of the different types of contacts described on p. 5. Thus, the Contact Services include:

*A. Inpatient Services*
*B. Partial Care Services*
*C. Outpatient Services*
*D. After-Hours Emergency Services*
*E. Consultation and Education Services (Consultation/Education services)*

*Intraorganizational Support Services:* These consist of activities which are not directly associated with the production of contacts but which provide general, indirect support for such contacts. In a recent NIMH publication, these services are defined as "activities or functions performed by or for the organization itself,

and directed towards the support, maintenance, and development of the organization itself" (Southern Regional Education Board 1973, p. 96). The Support Services include:

*F. Inservice Training.* These activities include lectures, seminars, workshops, conferences, and other training programs designed for staff development, i.e., designed to increase the job-related mental health skills of CMHC personnel.

*G. Research and Evaluation.* These consist of the activities involved in providing objective information regarding the CMHC's workload, the cost of services, the cost effectiveness of services, the nature of community needs and resources, the extent to which CMHC goals and objectives are being met, etc.

*H. Planning and Development.* These activities involve planning and development for the adaptive growth and change of the CMHC, e.g., planning and developing a grant proposal to serve unmet needs in the catchment area; developing and maintaining working relationships with State legislators around issues of CMHC funding and accountability; and developing and maintaining inter-CMHC relationships to coordinate regional and national CMHC activities.

*I. General and Administrative Services.* General Services are support activities usually associated with the delivery of hospital and other institutional services, e.g., dietary, laundry, pharmacy, laboratory, housekeeping, and central supply services. Administrative services consist of the administrative activities involved in the day-to-day, ongoing "business" operations of a CMHC, including such areas as personnel policies, payroll, accounting, budgeting, grants management, purchasing, client and third-party billing, and general secretarial functions.

The center divisions of a CMHC refer to the specific administrative organizational units of that agency at a particular point in time. While the center divisions of some CMHCs closely follow the NIMH service elements (e.g., inpatient division, partial care division, outpatient division, etc.), the center divisions of other CMHCs follow other categories, such as the following listed by the Southern Regional Educational Board (1973):

- Age (e.g., a children's division, an adolescent division, an adult division, and a geriatric division).
- Sex (e.g., a division for males and a division for females).
- Geographic basis (different divisions may serve persons residing in different parts of the CMHC catchment area).
- Problem (e.g., a division for drug abuse, a division for alcohol abuse, a division for the mentally retarded, and a division for general mental health problems).
- Professional specialty (e.g., psychiatric, psychological, social work, and nursing divisions).
- Program element or service modality (e.g., inpatient, outpatient, partial hospitalization, emergency, and consultation/education divisions).
- Facility (e.g., outpatient office, halfway house, and general hospital psychiatric unit divisions).
- Function (e.g., intake, treatment, research, rehabilitation, advocacy, and business divisions).

The Generic Target Groups of a CMHC refer to categories of its clients defined in a manner which is standardized across different agencies. For example, at the Federal level, mental health clients are divided into three major groups: those with primary generic mental health problems, who are served through the National Institute of Mental Health (NIMH); those with primary alcohol-abuse problems, who are served through the National Institute on Alcohol Abuse and Alcoholism (NIAAA), and those with primary drug abuse problems, who are served through the National Institute on Drug Abuse (NIDA).

The nature of the three-dimensional Organizational Matrix is illustrated in figure 9 for the People's Community Mental Health Center, a hypothetical CMHC with 10 organizational divisions. The matrix is structured as follows:

- The columns of the matrix, labeled 01-10 and 98-99, represent the various administrative internal divisions of the center.
- The rows of the matrix, labeled A-K, represent the NIMH generic service elements delivered by the People's Center.
- The depth dimension of the matrix, labeled a-e, represents the various Federal generic target groups potentially served by the center.

For example, matrix cell C-02-a represents outpatient services delivered by division 02 (the Northwest team) to generic mental health clients.

The Organizational Matrix is one way in which an agency's services can be multidimensionally defined to meet the needs of different management groups. Specifically, if an agency collects cost and workload data by Organizational Cell and then totals the data into the matrix margins, then:

- The column margins summarize cost and workload by center division, allowing for internal agency management by administrative division.

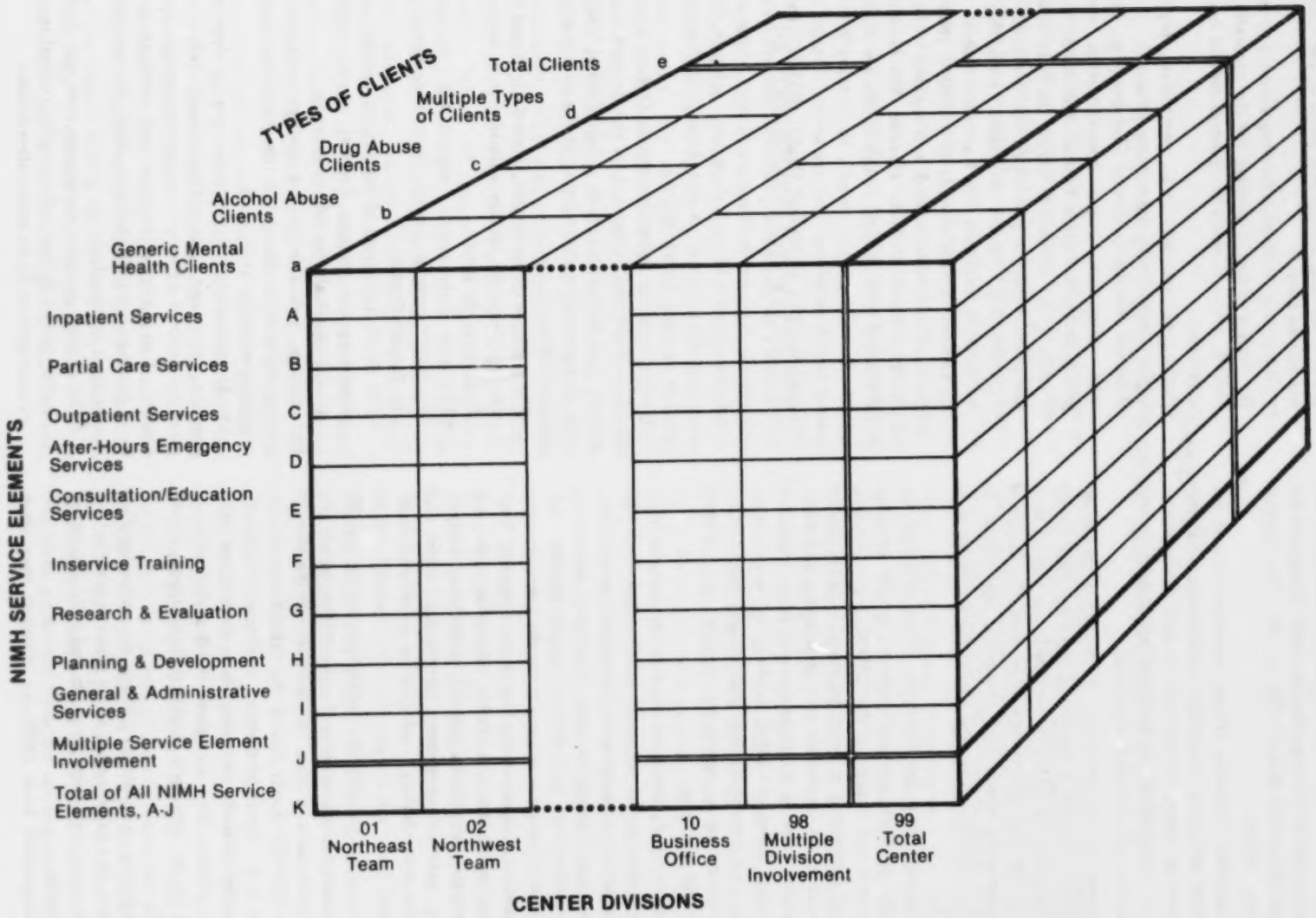


**Figure 9. Organizational matrix in three dimensions for the People's CMHC**

- The row margins summarize cost and workload by NIMH service element, allowing comparison of the agency with all other CMHCs nationally.
- The depth margins summarize cost and workload by Federal target group, again allowing comparison of the agency with all other CMHCs nationally.

It should be noted that the number of dimensions of the Organizational Matrix could be expanded to meet additional management and accountability needs. For example, if a State used different service elements and target groups from NIMH, separate State dimensions could be added to reflect this. Or it might be of interest to expand into additional target group dimensions, such as age, sex, and deinstitutionalization status. Or a center might want its own individual dimension of target groups.

Table 12 focuses on the NIMH service elements and center divisions of the People's Center. Since the matrix has 11 center divisions and 10 NIMH service elements, there are 110 organizational cells; i.e., there are 110 possible types of service that a CMHC with this number of organizational cells can provide. In the People's Center example, not all the possible organizational cells actually exist. Those which are actually assumed to exist are indicated by an *X*. The pattern of X's in the matrix represents the following organizational structure:

- There are four geographic teams (Divisions 01-04), each of which provides partial, outpatient, and afterhours emergency care to all nonalcohol-abuse patients of all ages living in a specific quadrant of the CMHC's catchment area. Each of these teams also provides consultation and education services in their geographic quadrants.
- All nonalcohol-abuse patients requiring inpatient care are handled by one of two centralized divisions: Division 05 if the patient is an adult or adolescent; and Division 06 if the patient is a child.
- All alcohol-abuse patients are served by Division 07, which provides comprehensive patient services. This division also provides alcohol-abuse consultation and education services to the entire catchment area.
- The director's office, Division 08, is involved with planning and development and general and administrative services.
- All research and evaluation activities are conducted by Division 09. This division is also involved with planning and development.
- The business office, Division 10, is involved with planning and development and general and administrative services.
- Finally, all the divisions participate in inservice training.

## Cost Finding and CMHC Services

Cost finding for CMHC services refers to the analysis of a CMHC's total workload and expenses in order to estimate the true total cost per unit of each type of service, i.e., the true total cost of a day of inpatient care, an hour of outpatient care, etc. In their widely known NIMH monograph, *Cost Finding and Rate-Setting for Community Mental Health Centers*, Sorensen and Phipps (1972) explain in great detail the concept of cost finding, and they set forth a series of principles and guidelines for applying the concept to CMHCs. The cost-finding Component of the D*A*R*E System was developed by taking Sorensen and Phipps' conceptural framework, principles, and guidelines and combining them with the concept of a CMHC's organizational matrix just described. The result of this merging of concepts is a specific set of cost-finding procedures that can be applied to any CMHC in order to derive unit costs which can be compared with those of any other CMHC to which the procedures are also applied. The following section of this chapter describes these procedures and assumes the reader is familiar with the Sorensen and Phipps monograph.

## Using the Organizational Matrix for CMHC Cost Finding

Sorensen and Phipps define cost finding as any method which is designated to charge all relevant costs of a CMHC—both direct and indirect—to the final products of the CMHC. In other words, cost finding is any method in which the total dollars going into the center are rationally allocated among contact services. The five contact services—Inpatient, Partial Care, Outpatient, After-Hours Emergency, and Consultation/Education Services—will be used to illustrate this method. Cost finding can be defined more specifically as any method in which (a) the total expenses of the CMHC are first rationally allocated to the five contact services; and then (b) the resulting total expenses for a particular contact service are divided by the total units of workload of that contact service to yield the total center cost per unit of the contact service.

An important concept in the process of cost finding

**Table 12: Organizational Matrix in Two Dimensions for the People's CMHC**

| | | | CENTER DIVISIONS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NIMH SERVICE ELEMENTS | Ele. Row | Northeast Geographic Team | Northwest Geographic Team | Southwest Geographic Team | Southeast Geographic Team | Centralized Adult & Adolescent Inpatient Team | Centralized Child Inpatient Team | Alcohol-Abuse Team | Director's Office | Research & Evaluation Division | Business Office | Multiple Division Involvement | Center Total: Total of all Divisions, 01-10, and 98 |
| | | | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 98 | 99 |
| CONTACT SERVICES | Inpatient Services | A | | | | | X | X | X | | | | X | X |
| | Partial Care Services | B | X | X | X | X | | | X | | | | X | X |
| | Outpatient Services | C | X | X | X | X | | | X | | | | X | X |
| | After-Hours Emergency Services | D | X | X | X | X | | | X | | | | X | X |
| | Consultation/Education Services | E | X | X | X | X | | | X | | | | X | X |
| SUPPORT SERVICES | Inservice Training | F | X | X | X | X | X | X | X | X | X | X | X | X |
| | Research & Evaluation | G | | | | | | | | | X | | X | X |
| | Planning & Development | H | | | | | | | | X | X | X | X | X |
| | General & Administrative Services | I | | | | | | | | X | | X | X | X |
| | Multiple Service Element Involvement | J | X | X | X | X | X | X | X | X | X | X | X | X |
| | Total of All NIMH Service Elements, A-J | K | X | X | X | X | X | X | X | X | X | X | X | X |

NOTES: 1. The Organizational Cells which are assumed to exist at People's CMHC are indicated by an "X".
2. Each cell in the matrix is labeled by the letter of the NIMH Service Element row followd by the number of its division column. Thus, cell B-01 refers to Partial Care Services delivered by Division 01; cell C-02 refers to Outpatient Services delivered to Division 02; etc.

is that of direct vs. indirect expenses (Sorensen and Phipps, pp. 17-20). In terms of the Organizational Matrix, illustrated in table 12, the direct expenses of a particular cell can be defined as those that are explicitly incurred by the cell and thus are assigned to that cell when they are first entered in the center's accounting books. Indirect expenses, on the other hand, are those which are accumulated in one cell of the matrix and then "allocated" to another cell at a later point in the cost-finding process. (See Sorensen and Phipps, pages 23-24, for a detailed discussion of the allocation process.) For example, suppose that at the People's CMHC the main building is equally divided between the northeast team and the business office (Divisions 01 and 10). Suppose further that, during calendar 1974, the business office received one monthly bill of $4,000 for the rental of the main building and that, when this check was paid each month, it was entered in the books as an expense of cell I-10 of the Organizational Matrix in table 12, i.e., as a general administrative expense of Division 10, the business office. In this situation, the $48,000 for the 1974 is a direct expense of matrix cell I-10.

Suppose the People's Center desires to perform a cost-finding analysis based upon 1974 expenses and workload. Since one-half of the $48,000 in rent was associated with the space in the main building used by the northeast team, part of the cost-finding process involves subtracting $24,000 from cell I-10 and adding $24,000 to the cells in column 01. The proportion of the $24,000 added to any particular cell in column 01 would be dependent upon some allocation principle, e.g., the proportion of the northeast team's staff time that was associated with that cell. Once the $24,000 is added to the cells in column 01, it becomes an indirect expense of these cells.

The basic steps in cost finding can be outlined as follows.

1. Throughout 1974, all *expenses* of the People's Center are directly assigned to one of the cells of the Center's Organizational Matrix in table 12. All these expenses are thus direct expenses.

2. At the end of 1974, all direct expenses within each cell are accumulated. Then, on the basis of some specific rational allocation method, all direct expenses of rows F-J are allocated to the five Contact Services, rows A-E. In other words, all expenses of the center are either directly or indirectly allocated to the five Contact Services. (Note that there are at least four possible methods for allocating indirect expenses to the Contact Service cells. For a detailed discussion of these, the reader is referred to Sorensen and Phipps' monograph (pp. 36-40.)

3. Throughout 1974, all *contacts* of the People's Center are directly assigned to a particular Contact Services cell, based upon the type of Contact Service involved and the Center Division which provided the contact.

4. Finally, for each Contact Service call, the total 1974 *expenses* accumulated for that cell (from step 2) are *divided* by the total 1974 *units of service* accumulated for the cell (from step 3), to yield an *average cost per unit of contact*.

In sum, then, the Organizational Matrix illustrated in table 12 is sufficient to yield unit cost rates for a particular contact service as delivered by a particular center division, or as delivered by the CMHC as a whole. For example, this process was applied in 1974 at the Adams County Mental Health Center and yielded a unit cost rate of $28.50 for 1 hour of an average Adams Center clinician delivering 1 hour of an average outpatient contact (see Cell C-99 of the matrix). However, as in all CMHCs, outpatient contacts at the Adams Center are delivered by a variety of clinicians, including paraprofessionals, nurses, social workers, psychologists, and psychiatrists; and, since the salaries of these different disciplines vary widely, the cost of an outpatient hour varies, depending upon the discipline of the clinician.

Thus, it becomes of interest to differentiate cost finding so that unit costs can be calculated for a particular type of contact as delivered by a particular type of clinician. In approaching this task, it is first necessary to differentiate two types of contact service expenses: discipline-variable expenses, which vary from contact to contact as clinicians of different disciplines deliver the contacts; and discipline-fixed expenses, which do not so vary. With inpatient and partial care services, contacts are most straightforwardly viewed as being delivered by the entire clinical team, and thus there are no discipline-variable expenses. However, for outpatient, after-hours emergency, and consultation/education services, most contacts are provided by one or two clinicians who vary in discipline from contact to contact. Thus, for these contacts, the salary associated with the time the clinician spends in actually providing particular contacts and in supporting those contacts is a discipline-variable expense. All discipline-variable expenses are direct expenses, and illustrations of these expenses are listed on p. 44. Also listed are illustrations of direct discipline-fixed expenses. In addition, all indirect contact service expenses are categorized as discipline-fixed expenses. Table 13 shows how the basic organizational matrix in table 12 can be expanding to accommodate a breakdown of outpatient, emergency, and consultation/education services into the discipline-fixed vs. discipline-variable subcategories.

Finally, the concept of discipline-variable vs. discipline-fixed expenses can be applied to the task of deriving contact unit costs which vary as a function of the clinician's discipline. For illustration, it is assumed that we wish to do this for the People's Center for outpatient services in terms of five different disciplines: psychiatrists, psychologists, social workers, nurses, and all others who are considered paraprofessionals. For this example, the Outpatient Service rows in table 13 are differentiated by discipline and shown in table 14. Then Outpatient Service cost finding by discipline can proceed by using the following steps.

1. Throughout 1974, all expenses of the People's Center are directly assigned to one of the cells in the center's Organizational Matrix in table 14. All these expenses are thus direct expenses.

2. At the end of 1974, all direct expenses within each cell are accumulated. Then, on the basis of some specific rational allocation method, all direct expenses of rows F-J are allocated to the five Contact Services, rows A-E. In other words, all expenses of the center are either directly or indirectly allocated to the five Contact Services.

3. Throughout 1974, all outpatient contacts of the People's Center are assigned to cells in table 14 as follows:

   A. All Division 01 outpatient contacts are assigned to the various cells in column 01 in the manner described below:
      1. All contacts provided by a psychiatrist are assigned to cell C2a-01.
      2. All contacts provided by a psychologist are assigned to cell C2b-01.
      3. All contacts provided by a social worker are assigned to cell C2c-01.
      4. All contacts provided by a nurse are as-

**Table 13: People's CMHC Organizational Matrix Expanded to Accommodate Discipline-Fixed vs. Discipline-Variable Expenses**

| | | | CENTER DIVISIONS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Northeast Team | Northwest Team | Southwest Team | Southeast Team | Adult & Adolescent Inpatient Team | Child Inpatient Team | Alcohol-Abuse Team | Director's Office | R & E Division | Business Office | Multiple Division Involvement | Total of all Divisions, 01-10, and 97 |
| | NIMH SERVICE ELEMENTS | Ele. Row | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 97 | 99 |
| CONTACT SERVICES | Inpatient Services | A | | | | | X | X | X | | | | X | X |
| | Partial Care Services | B | X | X | X | X | | | X | | | | X | X |
| | Outpatient Services: Discipline-Fixed | C1 | X | X | X | X | | | X | | | | X | X |
| | Outpatient Services: Discipline-Variable | C2 | X | X | X | X | | | X | | | | X | X |
| | After-Hours Emergency Services: Discipline-Fixed | D1 | X | X | X | X | | | X | | | | X | X |
| | After-Hours Emergency Services: Discipline-Variable | D2 | X | X | X | X | | | X | | | | X | X |
| | Consultation/Education Services: Discipline-Fixed | E1 | X | X | X | X | | | X | | | | X | X |
| | Consultation/Education Services: Discipline-Variable | E2 | X | X | X | X | | | X | | | | X | X |
| SUPPORT SERVICES | Inservice Training | F | X | X | X | X | X | X | X | X | X | X | X | X |
| | Research & Evaluation | G | | | | | | | | | X | | X | X |
| | Planning & Development | H | | | | | | | | X | X | X | X | X |
| | General & Administrative Services | I | | | | | | | | X | | X | X | X |
| | Multiple Service Element Involvement | J | X | X | X | X | X | X | X | X | X | X | X | X |
| | Total of All NIMH Service Elements, A-J | K | X | X | X | X | X | X | X | X | X | X | X | X |

NOTES: 1. The Organizational Cells which are assumed to exist at People's CMHC are indicated by an "X."
2. Each cell in the matrix is labeled by the letter of the NIMH Service Element row followed by the number of its Division column. Thus cell B-01 refers to Partial Care Services delivered by Division 01; cell C1-02 refers to Discipline-Fixed, Outpatient Services delivered to Division 02, etc.

signed to cell C2d-01.

5. All contacts provided by a paraprofessional are assigned to cell C2e-01.
6. In addition to the assignments in the four steps above, all contacts are assigned to cell C1-01.

B. All Division 02 outpatient contacts are likewise assigned to the various cells in column 02 in table 14 for the remaining center divisions.

4. For each Outpatient Service cell, the total 1974 *expenses* accumulated for that cell (from step 2) are *divided by* the total 1974 *units of service* accumulated for that cell (from step 3). For the cells in row C1, this yields the average discipline-fixed cost per unit of outpatient contact. For the cells in row C2a, this yields the average discipline-variable cost per unit of outpatient contact delivered by an average *psychiatrist*. For the cells in row C2b, this yields the average discipline-variable cost per unit of outpatient contact delivered by an average *psychologist*, and likewise for the cells in rows C2c, C2d, and C2e.

5. For the cost of an average hour of an outpatient contact delivered by an average psychiatrist from any particular center division, focus on the column of table 14 that is associated with that division. For exam-

**Table 14: People's CMHC Organizational Matrix Expanded to Accommodate a Breakdown of Outpatient, Discipline-Variable Expenses**

| | | CENTER DIVISIONS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Northeast Team | Northwest Team | Southwest Team | Southeast Team | Adult/Adolescent Inpatient Team | Child Inpatient Team | Alcohol-Abuse Team | Director's Office | R & E Division | Business Office | Multiple Division Involvement | Total of All Divisions |
| NIMH SERVICE ELEMENTS | Ele. Row | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 98 | 99 |
| CONTACT SERVICES | | | | | | | | | | | | | |
| Inpatient Services | A | | | | | X | X | X | | | | X | X |
| Partial Care Services | B | X | X | X | X | | | X | | | | X | X |
| Outpatient Services: Discipline-Fixed | C1 | X | X | X | X | | | X | | | | X | X |
| Outpatient Services: Discipline-Variable, as delivered by All Staff | C2 | X | X | X | X | | | X | | | | X | X |
| a. delivered by Psychiatrists only | C2a | X | X | X | X | | | X | | | | X | X |
| b. delivered by Psychologists only | C2b | X | X | X | X | | | X | | | | X | X |
| c. delivered by Social Workers only | C2c | X | X | X | X | | | X | | | | X | X |
| d. delivered by Nurses only | C2d | X | X | X | X | | | X | | | | X | X |
| e. delivered by Paraprofessionals only | C2e | X | X | X | X | | | X | | | | X | X |
| After-Hours Emergency Services: Discipline-Fixed | D1 | X | X | X | X | | | X | | | | X | X |
| After-Hours Emergency Services: Discipline-Variable | D2 | X | X | X | X | | | X | | | | X | X |
| Consultation/Education Services: Discipline-Fixed | E1 | X | X | X | X | | | X | | | | X | X |
| Consultation/Education Services: Discipline-Variable | E2 | X | X | X | X | | | X | | | | X | X |
| SUPPORT SERVICES | | | | | | | | | | | | | |
| Inservice Training | F | X | X | X | X | X | X | X | X | X | X | X | X |
| Research & Evaluation | G | | | | | | | | | X | | X | X |
| Planning & Development | H | | | | | | | | X | X | X | X | X |
| General & Administrative Services | I | | | | | | | | X | | X | X | X |
| Multiple Service Element Involvement | J | X | X | X | X | X | X | X | X | X | X | X | X |
| Total of All NIMH Service Elements, A-J | K | X | X | X | X | X | X | X | X | X | X | X | X |

NOTES: 1. The Organizational Cells which are assumed to exist at People's CMHC are indicated by an "X."
2. Each cell in the matrix is labeled by the letter of the NIMH Service Element row followed by the number of its Division column. Thus cell B-01 refers to Partial Care Services delivered by Division 01; cell C1-02 refers to Discipline-Fixed, Outpatient Services delivered to Division 02, etc.

ple, take Division 01, the northeast team. From step 4, the unit cost in cell C1-01 gives the discipline-fixed component of the total outpatient unit cost; and the unit cost in cell C2a-01 gives the psychiatrist discipline-variable component. Adding these two unit costs together yields the total cost of an average hour of outpatient contact delivered by an average psychiatrist of the northeast team.

6. For the cost of an average hour of an outpatient contact delivered by an average psychologist from a

particular center division, e.g., Division 01, follow the procedures in step 5 above employing cells C1-01 and C2b-01 of table 14. Likewise, the cost of an average hour of an outpatient contact delivered by an average social worker from the northeast team involves cells C1-01 and C2c-01; for an average nurse, cells C1-01 and C2d-01; and for an average paraprofessional, cells C1-01 and C2e-01.

When these procedures were applied in 1974 to the Outpatient Services at the Adams County Mental Health Center for column 99, i.e., for the center-wide average outpatient contact, the following average costs were found: for a psychiatrist, $45.60 per hour; for a psychologist, $30.60 per hour; for a social worker, $28.20 per hour; for a nurse, $27.00 per hour; and for all other clinicians, $24.60 per hour.

# Chapter VI

# THE D*A*R*E SYSTEM'S APPROACH TO ASSESSING SERVICE EFFECTIVENESS

As described in chapter I and illustrated in table 1, the present cost-effectiveness evaluation model requires the derivation of a single index of client outcome. Our approach for deriving such a single score involves the assessment of standard, multiple dimensions of outcome, and then the reduction of those multiple dimensions to one score on the basis of the decisionmaker's values via a specially developed procedure called "Decision-Maker Value Analysis" (DMV analysis). This chapter discusses the rationale for such an approach and describes the particular assessment instruments employed to implement it.

## Rationale for the Multidimensional Assessment of Outcome Employing Standard, Substantive Dimensions*

Rivlin (1971) notes that generally, single measures of health, education, and welfare program performance lead to "distortion, stultification, cheating to 'beat the system,' and other undesirable results . . . . Multiple measures are necessary to reflect multiple objectives and to avoid distorting performance." In the mental health literature, this point has been documented again and again. This literature has been carefully and extensively reviewed by Bergin and Strupp under an NIMH contract, and on the basis of their review, Bergin (1971) makes the following conclusions and recommendations:

> The most obvious thing to be concluded from the various intercorrelations of therapy outcome criteria . . . and from the divergent results obtained by using different criteria with the same client group . . . is that the process of therapeutic change in patients is multifactorial. . . We feel quite strongly that researchers and therapists should begin to think more precisely in terms of kinds of change rather than in terms of a general multiform change.
>
> The clearest issue in criterion development and selection at the present time is whether evaluation should be based chiefly upon external behavior or internal states of experience . . . Since "internal" and "external" criteria measure different human characteristics, since these characteristics are significant, since changes occur in both domains during therapy, and since important decisions regarding the value of different techniques continue to be based on the extent of change induced by them, we recommend that future studies include representative measures derived from this dichotomy (pp. 257-258).

There are two general types of approaches to outcome measures that have been developed:

- *Generic-dimensional measures* (e.g., Ciarlo et al. 1972).
- *Individualized-goal measures* (e.g., Kiresuk 1973).

With the generic-dimensional approach, a client is assessed at the beginning of treatment in terms of a limited number of standard dimensions of functioning, such as productivity and affective distress. At followup, the client is again assessed in terms of the same standard dimensions. Outcome is measured in terms of level of functioning of each variable at followup, as compared with the level of functioning on the same variable at the beginning of treatment.

With the individualized-goal approach, at the beginning of treatment an individualized, unique set of goals is developed for each individual client. Outcome is measured in terms of level of functioning relevant to the various goals at followup, as compared with the desired level of functioning that was set as a goal at the beginning of treatment.

While the generic-dimensional and individualized-goal approaches to outcome assessment are complementary in their various distinctive assets, time economy of the assessment procedure necessitated the choice of only one approach for the D*A*R*E System. The generic-dimensional approach was deemed a more appropriate one, with the chosen procedure in-

* This section is adapted from Fishman 1975*b*.

volving a structured, fixed-alternative, person-to-person interview with the client. Five advantages of such a generic-dimensional interview over the individualized-goal approach to outcome assessment can be listed.

### Psychometrics

Psychometrically, the generic-dimensional interview has the advantage of containing a series of standardized questions asked of each client. Data on the psychometric properties of items and scales can be readily derived, e.g., the shape of the frequency distribution of the item and the concurrent validity of the item. In contrast, the individualized-goal approach involves items that are tailored to different individuals, and thus there is no standardized set of items to be psychometrically studied.

### Training and Reliability

Since a structured, fixed-alternative interview is relatively easy to teach, consistent and reliable administration of the procedure is better ensured. For example, this type of interview has been developed by Dohrenwend (1973) for an epidemiological study, and Dohrenwend has found it feasible to have the interview conducted by a polling organization employing many interviewers with no specific training in mental health. In contrast, to generate goals on an individualized-goal measure at the beginning of therapy involves an interviewer with some specialized mental health training. Moreover, this tailoring aspect of the procedure makes it intrinsically open-ended and somewhat unstructured, thus creating training and reliability problems.

### Interview Effort

In employing the generic-dimensional approach, it is possible to equate groups initially (by random assignment and/or by matching on demographic and clinical information) and then assess relative treatment effectiveness by administering a generic-dimensional interview *at followup only*. Since the groups are equated initially, any differential changes that take place in groups are reflected in differences in their level of functioning at followup. In contrast, an individualized-goal measure intrinsically requires both initial and followup interview sessions.

### Public Accountability

The generic-dimensional approach is superior to the individualized-goal approach in meeting many public accountability questions. The public in general and its elected representatives are interested in knowing the effectiveness of a particular mental health program in dealing with particular types of problems like work impairment, emotional distress, drug and alcohol abuse, and marital disruptions. This type of effectiveness data is generated by a generic-dimensional approach. In contrast, the individualized-goal approach only yields information as to what degree a client's individualized goals are achieved; since the goals are individualized, there is less potential for standardized information concerning generic problem areas.

### Needs Assessment

A frequently employed approach for assessing unmet mental health needs in a community is to assess the percentage of nonclients in the community who manifest levels of functioning which are as impaired or more impaired than those of identified patients (e.g., see Dohrenwend 1967; Dohrenwend and Dohrenwend 1969; Leighton et al. 1964; and Srole et al. 1964). A structured, fixed-alternative generic-dimensional interview is often chosen as the most appropriate assessment technique for such epidemiological studies. For example, Ciarlo (1973), Dohrenwend (1973), and Warheit et al. (1973) have used it this way. In this type of study, the same generic-dimensional interview is used for assessing the level of functioning of a representative sample of nonclients in the community, of clients at intake, and of former clients at followup. Comparisons between the functioning of these various groups can then answer such questions as:

- What percentage of the nonclient population is functioning at the same level as identified patients at intake? This percentage can be interpreted as one indicator of the unmet need for mental health services.
- Is the distribution of types of functional impairment in the community similar to the distribution of types of functional impairment of clients at intake? The answer to this question is one indicator of the extent to which a particular program is meeting the priorities of problems in the community.
- To what extent does the functioning of former clients at followup improve relative to their functioning at intake and approach the average level of functioning in the community? The answer to this question provides an indication of the absolute meaning of the effectiveness data in the context of meeting mental health needs.

Thus, the same generic-dimensional assessment technique can be used both for measuring client out-

come and for unmet community mental health needs. In contrast, an individualized-goal assessment technique is not appropriate for the assessment of unmet community mental health needs because the intrinsic nature of an individualized-goal technique yields goals that are based on the unique situation of each individual being assessed. Therefore, it is not possible to compare the goals generated by identified clients as a group vs. nonclients as a group. Moreover, there does not appear to be another need assessment model for which the individualized-goal approach would be an appropriate assessment technique.

## Criteria for Selecting Generic Dimensions To Be Included in an Outcome Interview

In selecting the particular generic dimensions to include in our outcome interviews, we relied heavily on the work of Ciarlo at Denver General Hospital. In a paper delivered to the Annual Convention of the American Psychological Association, Ciarlo et al. (1972) described some of the guidelines that strongly influenced his project's choice of client outcome dimensions as follows:

> First, we felt that an outcome measure should address itself to the *major problems about which the community is concerned*. Here we intend "community" to mean the formal decision making bodies which have the power and responsibility to allocate funds, institute programs, and regulate types and quality of services. In our urban community, as in many others, prime concerns include such things as severe psychological incapacitation and resultant public dependency, alcoholism, drug abuse, violence, and family disruption.
>
> Second, we felt the measure should be *applicable to essentially all types of clients* served by an urban CMHC. This includes persons who bring to the Center their problems in personal disability, substance abuse, family troubles, job functioning, anxiety and depression, somatic complaints—indeed, the entire gamut of psychological difficulties which may be incurred from early childhood through senescence. Applicability to all types of problems increases comparability of program results, and also helps in evaluating multi-problem as well as single problem clients.
>
> Third, the measure should get at *what program managers and clinicians feel they are trying to accomplish* with their clients. Here the objectives should be quite concrete and behavioral, rather than highly abstract and theoretical. The typical CMHC has clinicians of many theoretical persuasions, and somehow the outcome measures must be relevant to most of them.
>
> Fourth, the outcome measures should be *unrelated to the specific treatment program* or individual interventions applied in each case, so that alternative treatment strategies and approaches can be compared with the same measure. For example, a client's "ability to remain in the community" may be a measure of program impact for an inpatient-oriented program; yet how can this serve to evaluate outcome for persons who never need hospitalization? It is this very dissimilarity in treatment modality (i.e., outpatient versus inpatient) which should be evaluated on the same type of clients using the same outcome instrument. Only in this way can we judge the effectiveness of one approach with that of the other.
>
> Fifth, outcome should be *assessable by a sensitive and well-trained*, but not necessarily professionally skilled, person. Simple assessment procedures seemed to promise reliability and economy, both important in an ongoing evaluation effort.
>
> Sixth, the outcome measurement *procedure should work with all clients*—that is, it should not be restricted by such techniques as using spouses as the primary data source, since a very large number of clients do not have spouses. This led inevitably to considering the client himself as the primary data source, since the other major alternative—clinician opinion—was not equally applicable to all cases and was also not independent of treatment bias (pp. 2-4).

## Outcome Assessment With Child Clients: the Louisville Behavior Checklist

The outcome instrument selected for clients age 3-13 is the parent-completed Louisville Behavior Check List (LBCL) developed by Dr. Lovick Miller and his associates at the Child Psychiatry Research Center in Louisville, Ky. This instrument has two parallel forms, one for children age 3-6, and one for children age 7-13. This instrument was selected because it is simple to administer; it only takes an average of about 30 min-

utes to complete; and it has accrued impressive evidence of reliability and validity (Miller 1967, 1972, 1975; Miller et al. 1971, 1972*a*, 1972*b*).

The LBCL generates three major factor-analytically derived scales. These are listed as dimensions 1-3 in table 3: Socialized Behavior, Self-Esteem, and Learning Adequacy. This table gives a brief summary of the components that go into each scale. When used within the D*A*R*E System, the LBCL is supplemented with items adapted from the C*O*C*E Adult Interview (see below) to yield two additional scales, listed as dimensions 4 and 5 in table 3: Independence from Mental Health Services and Consumer Satisfaction.

In the pilot test of the D*A*R*E System, 12 children age 7-13, representative of all Adams Center admissions in this age range, were assessed at admission and 3-month followup on the LBCL. A comparison of these two sets of scores is presented in table 15.

As can be seen from the table, significant improvement occurs at 3-month followup for all of the scales, thus providing further evidence that the LBCL scales are sensitive to treatment-associated behavioral change in a CMHC setting.

**Table 15. Comparison of the Louisville Behavioral Checklist Scores at Admission and 3-Month Followup of a Representative Group of Adams Center Clients, Aged 7-13 (N = 12)**

| SCALE | Admission Mean | Admission SD | 3-Month Followup Mean | 3-Month Followup SD | T-test |
|---|---|---|---|---|---|
| 1. Socialized Behavior | 18.9[a] | 18.4 | 30.4 | 16.9 | 2.13*[b] |
| 2. Self-Esteem | 36.6 | 9.7 | 42.9 | 9.4 | 2.38** |
| 3. Learning Adequacy | 27.1 | 7.7 | 38.5 | 8.0 | 4.11*** |
| 4. "Total Disability" (the sum of the items in Scales 1-3)[c] | 23.3 | 12.7 | 34.7 | 11.5 | 2.88** |

[a] Means are in terms of T-scores based upon a representative sample of 236 boys and girls age 7-12, which are described as representative of the general population in this age range in urban areas of mid-America (Miller 1975, page 15).

[b] Two-sided probability levels: *.10, **.05, ***.01.

[c] Note that the "Total Disability" Scale is very similar to the "Team Leader" Summary-Functioning Scale described in table 6.

## Outcome Assessment With Clients 14 and Older: The C*O*C*E Adult Interview

While a search of the literature for an assessment instrument did not yield a single procedure that was completely appropriate to the needs of the D*A*R*E System, a combination of items and scales from a number of previously developed instruments, along with some newly developed scales, was able to serve our needs. These scales were incorporated into a new self-report interview called the Cost-Outcome/Cost Effectiveness Adult Interview (C*O*C*E) Adult Interview. Specifically, this instrument includes actual items and scales or adaptations of them from the following sources:

- A self-report inventory of social role functioning and psychopathological symptoms developed by Dr. Bruce Dohrenwend for a large NIMH-sponsored epidemiological study in New York City (Dohrenwend 1973).
- The Denver Community Mental Health Outcome Questionnaire developed by Dr. James Ciarlo for his "Mental Health Systems Evaluation Project" at Denver General Hospital. Knowledge about the Ciarlo questionnaire was obtained from papers presented by Dr. Ciarlo and his staff at the Annual Convention of the American Psychological Association (Ciarlo et al. 1972, 1974) and from personal communication with Dr. Ciarlo.
- The Florida Health Study Program Questionnaire, developed by Dr. George Warheit and Dr. John Schwab at the University of Florida for NIMH Grant MH-15900, titled "Evaluation Survey of Mental Health Needs." Knowledge about the Warheit/Schwab questionnaire was obtained from two papers by Warheit et al. (1972, 1973) and from personal communication with Charles Holzer of their staff.
- The Adams County Interview, developed at the Adams County Mental Health Center by Dr. Daniel Fishman and Ms. Carla Gordon (1973) for treatment-outcome studies. This interview is based in part upon the previous work of Ciarlo et al. (1972, 1974), Langsley et al. (1971), and Fishman (1973). The validity of this interview has been documented by analyzing results from 50 representative adult outpatients at admission into treatment, and 52 comparable adult outpatients seen in followup 3 months after admission. These analyses are as yet unpublished.
- The Psychoticism scale on the MMPI, developed by Wiggins (1966).
- The Psychiatric Status Schedule, developed by Spitzer et al. (1970).

- The Multiple Affect Adjective Checklist, developed by Zuckerman and Lubin (1965).

The resulting C*O*C*E Adult Interview Schedule is printed in appendix 3. It consists of 208 items, not all of which are administered to each interviewee. Appendix 4 outlines the content of the various subscales, the contingencies under which they are administered and how the subscales are combined into 14 final scales, which are the same dimensions as those presented in table 2. The Interview Schedule is designed to be administered by a trained clinical interviewer. Eleven of these scales are assessed by client self-report only. Scales 4 and 5, Emotional Comfort and Adaptive Thinking, are assessed with a combination of self-report and interviewer observation of the client's behavior during the interview. Scale 13, Independence from Mental Health Services, is assessed from client self-report and agency records.

The C*O*C*E Adult Interview Schedule is designed to be administered by a clinically knowledgeable interviewer, although not necessarily an individual with a formal clinical degree. In conjunction with the pilot test of the D*A*R*E System, such interviewers administered 379 interviews, at admission and/or followup, to a representative sample of clients at the Adams County Mental Health Center. These interviews ranged in duration from 20 to 80 minutes, with an average of 38 minutes per interview. The final report (Fishman 1975*a*) presents a copy of the Interview Schedule, procedures for administering it, and detailed evidence of its reliability and validity. A scoring manual for the Interview Schedule is presented in Fishman 1975*c*. Table 16 presents the intercorrelations among the 14 scales based upon the 379 pilot-test interviews. As can be seen, the intercorrelations are low, providing empirical support to the view that the scales are measuring different, independent aspects of functioning and are not simply reflecting a generalized response set or a psychopathology factor. The two exceptions include:

- The three socioemotional scales—Social Adequacy, Emotional Comfort, and Adaptive Thought—are all moderately intercorrelated, ranging between .32 and .54.
- The two alcohol scales—Alcohol Moderation and Freedom from Alcohol Impairment of Functioning—are correlated .53.

These two groups of correlations would *not* seem high enough, however, to suggest that the scales in each group are measuring the same dimension and should be merged on statistical grounds.

**Table 16. Intercorrelation Among the Scales Derived from the C*O*C*E Adult Interview**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scale 1: Productive Hours | | | | | | | | | | | | |
| Scale 2: Productive Adequacy[a] | .31 | | | | | | | | | | | |
| Scale 3: Social Adequacy | .20 | .48[c] | | | | | | | | | | |
| Scale 4: Emotional Comfort | .14 | .47 | .54 | | | | | | | | | |
| Scale 5: Adaptive Thinking | .27 | .32 | .37 | .38 | | | | | | | | |
| Scale 6: Alcohol Moderation | .11 | .06 | .13 | .19 | .20 | | | | | | | |
| Scale 7: Freedom from Alcohol Impairment of Functioning | .23 | .21 | .25 | .33 | .27 | .53[c] | | | | | | |
| Scale 8: "Soft" Drug Moderation | .19 | .10 | .06 | .12 | −.04 | .11 | .10 | | | | | |
| Scale 10[b]: Freedom from Drug Impairment of Functioning | .13 | .14 | .18 | .24 | .01 | −.09 | .21 | .21 | | | | |
| Scale 11: Law-abiding Behavior | .17 | .08 | .04 | .20 | .09 | .13 | .10 | .17 | .04 | | | |
| Scale 12: Independence from Welfare | −.03 | −.03 | .07 | .06 | .09 | −.06 | −.04 | .01 | −.04 | −.01 | | |
| Scale 13: Independence from Mental Health Services | .06 | .02 | .03 | .02 | .05 | .04 | .16 | −.05 | .00 | −.04 | .01 | |
| Scale 14: Consumer Satisfaction | .07 | .20 | .21 | .28 | .18 | .19 | .15 | .18 | .12 | .05 | .06 | −.08 |

[a] The number of interviews involved in each correlation is 379, with the exception of Scale 14, for which the number of interviews is 238.
[b] Scale 9, "Hard" Drug Moderation, is deleted because it had too little variation for meaningful correlations.
[c] The seven highest correlations are contained within the triangle or square.

## DMV Analysis: A Method of Combining Multiple Outcome Scores Into A Single Index Weighted for the Decisionmaker's Values

As shown in figure 7, step E, an important part of a cost-effectiveness analysis is the calculation of a change score between a client's preservice functioning and postservice functioning. Such change scores are labeled "outcome" scores. Once outcome scores are generated for each of the individual LBCL or C*O*C*E Adult Interview scales, the decisionmaking table in figure 3 requires that these multiple scores be reduced to one summary score. If decisionmakers are simply presented with a series of multiple outcome scores, all of which do not consistently favor a particular treatment group, they typically will either employ a subjective procedure for combining them into a summary score or will try to generate their own type of summary score through computation or weighting.

As an attempt to improve upon this rough method of summary outcome assessment, a more explicit and systematic procedure was developed for the D*A*R*E System. This approach is called decisionmaker value (DMV) analysis. Instead of simply an additive procedure, DMV analysis provides for differential weighting of the various outcome scores as a function of the *values* of the decisionmaker along two dimensions: (a) type of behavioral outcome (e.g., weighting more for improvement in Productive Adequacy than for improvement in Emotional Comfort); and (b) degree of severity of behavior involved in outcome (e.g., weighting more for improvement of a severe impairment in Productive Adequacy than for a similar amount of improvement of a mild impairment in Productive Adequacy). In addition, DMV analysis is designed to integrate a consumer-satisfaction scale into the final outcome summary score.

The details of how DMV analysis works will be illustrated for the C*O*C*E Adult Interview scales. The first step is to arrange the scales into a matrix, as shown in table 17, in which each row is a different scale and each column is a different scoring range or interval of any particular scale. The 14 scales and six scoring ranges create 84 cells. Each cell of the matrix thus is associated with scores for a particular scale that fall in a particular scoring range. To make the meaning of the score ranges consistent across all the scales, the first process in creating a DMV matrix is to administer the interview to a standardization population, for example, a representative sample of all patients who are admitted or readmitted to CMHCs. The raw scores achieved by this standardization sample on each of functioning scales 1-13 are then transformed into "T scores"; that is, the raw scores are transformed so that the new scores have a mean of 50 and a standard deviation of 10. If the standardization sample consists of clients at admission or readmission to a CMHC, a score which is below 30 can be viewed as reflecting "severe impairment," since it represents functioning that is more than two standard deviations below that of the average CMHC client at admission or readmission. Similarly, scores of 30 to 39 can be viewed as reflecting "marked impairment"; those of 40 to 49, "above average impairment"; those of 50 to 59, "below average impairment"; those of 60 to 69, "mild impairment"; and those of 70 and above, "minimal impairment."

Consumer Satisfaction, Scale 14, is added to the matrix by using a T-score standardization sample of representative CMHC clients at 3-month followup. The meaning of these scores can be viewed as comparable to those of the functioning scales, with a T-score below 30 viewed as reflecting "high dissatisfaction," since it represents dissatisfaction that is more than two standard deviations below that of the average CMHC client at 3-month followup. Likewise, scores of 30 to 39 can be viewed as reflecting "moderate dissatisfaction"; those of 40 to 49, "mild dissatisfaction"; those of 50-59, "mild satisfaction"; those of 60-69, "moderate satisfaction"; and those of 70 and above, "high satisfaction."

The 13 functioning scales are assessed both at intake and followup, and prepost change scores are computed. While the consumer satisfaction scale is only administered to clients at followup, change scores comparable to the functioning-scale change scores can be generated by automatically assigning dummy consumer satisfaction scores of 50 at intake. Then the difference between the 50 and the client's followup consumer satisfaction T-score is computed as the "change" score.

In sum, the DMV matrix in table 17 consists of six columns composed of score ranges (0-29, 30-39, 40-49, 50-59, 60-69, 70-100) and 14 rows consisting of the 14 scales. Such a matrix thus includes 84 cells, with each cell representing a particular score range of a particular scale. Change scores on each scale between admission and followup can be summarized in terms of so many points change within one or more of the 84 matrix cells. Moreover, since clients can potentially change in positive or negative directions between intake and followup, there are 168 possible types of change (84 boxes indicating types of changes multiplied by two directions of change). In DMV analysis, decisionmakers are asked to employ their own values in weighting (assigning points to) each of the 168 dif-

**Table 17. Matrix for Performing a DMV Analysis of Scores from the C•O•C•E Adult Interview**

| SCALE NAME | SCALE T-SCORE | | | | | |
|---|---|---|---|---|---|---|
| | Severe Impairment or High Dissatis-faction[1] | Marked Impairment or Moderate Dissatis-faction | Above Average Impairment or Mild Dissatis-faction | Below Average Impairment or Mild Satis-faction | Mild Impairment or Moderate Satis-faction | Minimal Impairment or High Satis-faction |
| | 0 30 | 40 | 50 | 60 | 70 | 100 |
| 1. PRODUCTIVE HOURS | | | | | | |
| 2. PRODUCTIVE ADEQUACY | | | | | | |
| 3. SOCIAL ADEQUACY | | | | | | |
| 4. EMOTIONAL COMFORT | | | | | | |
| 5. ADAPTIVE THINKING | | | | | | |
| 6. ALCOHOL MODERATION | | | | | | |
| 7. FREEDOM FROM ALCOHOL IMPAIRMENT OF FUNCTIONING | | | | | | |
| 8. "SOFT" DRUG MODERATION | | | | | | |
| 9. "HARD" DRUG MODERATION | | | | | | |
| 10. FREEDOM FROM DRUG IMPAIRMENT OF FUNCTIONING | | | | | | |
| 11. LAW-ABIDING BEHAVIOR | | | | | | |
| 12. FREEDOM FROM WELFARE | | | | | | |
| 13. INDEPENDENCE FROM MENTAL HEALTH SERVICES | | | | | | |
| 14. CONSUMER SATISFACTION | | | | | | |

[1] Scales 1-13 are rated in terms of impairment; Scale 14, in terms of satisfaction/dissatisfaction.

ferent types of change. For example, changes on the Productive Adequacy Scale might be weighted more highly than changes on the Emotional Comfort Scale; changes within more impaired levels of functioning might be weighted more highly than changes within less impaired levels; and improvement might be weighted more highly and in an opposite direction from deterioration.

Once the 168 weights have been assigned to the matrix cells in table 17 and once preservice and postservice scores have been generated for a particular interviewee, it is possible to calculate a single Weighted Summary Change Score for that interviewee. The procedures involved in this calculation are presented below.

*Step 1*

Create a matrix like the one illustrated in table 17. It may be desirable to number each cell from 1-n.

*Step 2*

Start with the first functioning scale, Productive Adequacy, and assign two separate, differential weights to each matrix cell associated with that scale:

- *Increase Weight.* This weight is employed if the change between the interviewee's preservice and postservice functioning score is located in the scoring range associated with the cell and if that change score indicates a higher, increased functioning score at postservice assessment.
- *Decrease Weight.* This weight is employed if the change between the interviewee's preservice and postservice functioning score is located in the scoring range associated with the cell and if that change score indicates a lower, decreased functioning score at postservice assessment.

*Step 3*

The actual preservice and postservice Productive Adequacy scores are transformed into standardized scores and then graphed into the appropriate cells of the matrix.

- If the change between preservice and postservice functioning falls within one particular cell:
  - If the change involves an increase in functioning at postservice assessment, then the change score is multiplied by the "increase weight" for that

cell, and the resulting product is the client's "INDIVIDUAL CHANGE" score on Productive Adequacy.

- If the change between preservice and postservice functioning involves more than one matrix cell, then the "INDIVIDUAL CHANGE" subscores associated with each cell are computed as just described above, and the computer than adds these subscores together to derive the interviewee's final "INDIVIDUAL CHANGE" score.

*Step 4*

Then derive "INDIVIDUAL CHANGE" scores for the interviewee on each subsequent scale by applying Steps 2 and 3 above to each of these scales.

*Step 5*

Finally, add together the 14 INDIVIDUAL CHANGE scores to derive a single Weighted Summary Outcome Score.

## Representative Change Scores Generated by the C*O*C*E Adult Interview

The data presented in figures 4 and 5 summarize results from administering the C*O*C*E Adult Interview to representative clients at the Adams County Mental Health Center. Tables 18 and 19 present the original data upon which these summaries were made. Specifically, the interview was administered to 104 sample A clients at admission and 3-month followup, and 134 Sample B clients at 20-month followup only. Sample A was representative of all center clients, which included 10 percent who were referred to partial care or inpatient services rather than to outpatient services, while Sample B was representative of outpatient clients only. Thus, it is quite possible that the Sample B clients as a group were healthier at admission than the Sample A clients, making inappropriate the comparison between the admission and 3-month interviews, on the one hand, and the 20-month interviews on the other. A preliminary analysis revealed no differences between the Sample A and Sample B clients on demographic characteristics, and on degree of interviewer-rated distress and client-rated distress at admission, employing the Multiple Affective Adjective Checklist (Zuckerman and Lubin 1965). However, it must be recognized that this preliminary analysis was not definitive and, thus, that the 20-month followup results in table 18 must be viewed as suggestive at best.

The results in table 18 can be summarized as follows:

- *Scale sensitivity to change between admission and followup.* On eight of the 11 scales that could be analyzed, significant changes occurred between admission and 3-month and/or 20-month followup. In every case, the change reflected improvement in functioning at followup.
  - The Scales which did not show change between admission and followup were 8, "Soft" Drug Moderation; 10, Freedom from Drug Impairment of Functioning; and 13, Independence from Welfare. As can be seen from figure 4, of the 11 scales analyzed, these three were the ones with highest estimated "community percentile-scores" at admission. This suggests that change between admission and followup might not have occurred because at admission clients manifested relatively little impairment, and thus improvement was not sought after or worked on. To assess this possibility, further investigation of these scales over time is needed in which samples with wider variation are employed.
- *Scale sensitivity to change between 3-month and 20-month followup.* On five of the 13 Scales that could be analyzed, significant changes occurred between the two followup periods, with improvement occurring over time for four of the five scales.

Table 19 is organized like table 18 and presents a comparison of change between admission and followup in terms of the three Summary-Functioning Scales described in chapter III: "Team Leader" Summary Functioning, "Client-Oriented" Summary Functioning, and "Economy-Oriented" Summary Functioning. As described earlier (cf. table 5), each Summary-Functioning Scale involves a particular integration of individual scales 1-13, with each based upon a different set of decisionmaker values. (Scale 14, Consumer Satisfaction, was deleted from these Summary Scales because it was not assessed at admission.) As can be seen from table 19, all three of the Summary-Functioning Scales are quite sensitive to changes which occur between admission, on the one hand, and 3-month and 20-month followup on the other.

**Table 18. Comparison of C*O*C*E Interview Scale Scores at Admission and Followup [a]**

| SCALE | Sample A: Admission (N = 104) Mean | SD | Sample B: 3-Month Followup (N = 104) Mean | SD | Sample B: 20-Month Followup (N = 134) Mean | SD | T-Test [c]: 3-Mo. Followup Vs. Admission | T-Test [c]: 20-Mo. Followup Vs. Admission | T-Test [c]: 20-Mo. Followup Vs. 3-Mo. Followup |
|---|---|---|---|---|---|---|---|---|---|
| 1. Productivity Hours [b] | 50.0 | 10.0 | 48.7 | 9.6 | 53.6 | 11.3 | −1.2 | 2.7*** [c] | 3.6**** |
| 2. Productive Adequacy [b] | 50.0 | 10.0 | 52.4 | 11.8 | 55.0 | 8.4 | 1.9* | 4.1**** | 2.0** |
| 3. Social Adequacy [b] | 50.0 | 10.0 | 52.9 | 10.0 | 54.0 | 10.3 | 3.2*** | 3.2*** | .8 |
| 4. Emotional Comfort [b] | 50.0 | 10.0 | 57.7 | 9.5 | 55.3 | 9.0 | 7.4**** | 4.5**** | −2.0** |
| 5. Adaptive Thinking [b] | 50.0 | 10.0 | 51.0 | 9.2 | 53.8 | 9.2 | 1.0 | 2.9*** | 2.1** |
| 6. Alcohol Moderation [b] | 50.0 | 10.0 | 52.0 | 3.1 | 51.1 | 6.2 | 1.8* | .9 | −1.4 |
| 7. Freedom from Alcohol Impairment of Functioning [b] | 50.0 | 10.0 | 52.2 | 7.4 | 51.4 | 9.2 | 2.2** | 1.2 | − .7 |
| 8. "Soft" Drug Moderation [b] | 50.0 | 10.0 | 51.2 | 10.4 | 51.0 | 7.7 | .9 | .7 | − .2 |
| 9. "Hard" Drug Moderation [c] | — | — | — | — | — | — | — | — | — |
| 10. Freedom from Drug Impairment of Functioning [b] | 50.0 | 10.0 | 51.2 | 5.6 | 51.2 | 4.2 | 1.1 | 1.2 | 0.0 |
| 11. Law-abiding Behavior [b] | 50.0 | 10.0 | 52.0 | 6.9 | 53.1 | 3.1 | 1.8* | 2.9*** | 1.4 |
| 12. Independence from Welfare [b] | 50.0 | 10.0 | 50.0 | 11.8 | 50.0 | 12.7 | 0.0 | 0.0 | 0.0 |
| 13. Independence from Mental Health Services [d] | 50.0 | 0.0 | 49.6 | 1.1 | 49.9 | .3 | — | — | 2.7*** |
| 14. Consumer Satisfaction [d] | — | — | 50.0 | 10.0 | 48.6 | 10.3 | — | — | − .9 |

[a] All scales scored so that higher scores indicate healthier functioning or greater consumer satisfaction.

[b] Scales 1-8 and 10-12 were T-scored on the basis of admission distributions.

[c] Scale 9 had too little variation to generate meaningful T-scores.

[d] Scale 13 had zero variance at admission and thus a special procedure was employed for simulating T-scores (as described in Fishman 1975*a*, Volume 1, page XVI-17). Scale 14 was not relevant at admission.

[e] Two-sided probability levels: * .10, ** .05, *** .01, **** .001.

**Table 19. Comparison of C*O*C*E Interview Summary-Scale Scores at Admission and Followup[a]**

| SUMMARY SCALE | Sample A: Admission (N = 104) Mean | SD | Sample A: 3-Month Followup (N = 104) Mean | SD | Sample B: 20-Month Followup (N = 134) Mean | SD | T-Test: 3-Mo. Followup vs. Admission | T-Test: 20-Mo. Followup vs. Admission | T-Test: 20-Mo. Followup vs. 3-Mo. Followup |
|---|---|---|---|---|---|---|---|---|---|
| 1. Team Leader Summary Functioning | 50.0 | 10.0 | 55.2 | 9.8 | 56.5 | 9.6 | 4.8**** [b] | 4.9**** | .8 |
| 2. Client-Oriented Summary Functioning | 50.0 | 10.0 | 53.7 | 10.1 | 55.5 | 10.5 | 3.3*** | 4.0**** | 1.2 |
| 3. Economy-Oriented Summary Functioning | 50.0 | 10.0 | 56.0 | 10.0 | 55.8 | 9.6 | 5.6**** | 4.5**** | − .2 |

[a] All Summary Scales scored so that higher scores indicate healthier functioning
[b] Two-sided probability levels: *** .01, **** .001

# Part 3. Summary and Implications for Mental Health Planning

*Audience*: Part 3 is intended for all readers.

*Content*: Chapter VII summarizes the total project and describes three of its broader aspects:

- Ramifications of the work at the Adams County Center with regard to Colorado's statewide mental health information system
- The relationship between the cost-effectiveness methodology and the total service delivery process
- Application of the cost-effectiveness model to the emerging human service concept

# Chapter VII

# SUMMARY AND IMPLICATIONS FOR MENTAL HEALTH PLANNING

In line with increasing efforts to develop accountability systems for mental health services, the present monograph summarizes an NIMH-sponsored project to develop and pilot test a generic cost-effectiveness methodology for CMHCs. The objectives of the project included: (a) developing a conceptual model of cost-effectiveness analysis as it applies to CMHCs; (b) relating this model to decisionmaking about CMHC services by groups, such as State and Federal legislators, NIMH planners, and CMHC managers, administrators, clinicians, and board members; (c) developing a generic, computerized cost-effectiveness methodology for implementing the model; and (d) pilot testing the resulting methodology with a sample of workload, cost, and outcome data from clients at a typical CMHC, the Adams County Mental Health Center. In this chapter, three broader implications of the project will be considered: statewide ramifications of the Adams Center pilot test; integration of the cost-effectiveness methodology into a systems model of the total service delivery process; and application of the cost-effectiveness model to the emerging human service concept.

## Statewide Ramifications of the Pilot Test

After the cost-effectiveness methodology was successfully pilot tested at the Adams County Mental Health Center, it became clear that the methodology's usefulness would be limited unless it was integrated into Colorado's statewide mental health management information system and budgeting formulas. State government decisionmakers could not fully evaluate data generated by the Adams Center without statewide comparison information. The level of sophistication of the State's evaluation and funding formulas is set by the evaluation data available from the least sophisticated agency in the State.

In light of this, the Adams Center administration worked closely with other centers across Colorado and with the State Division of Mental Health to incorporate the relevant components of the cost-effectiveness methodology into the statewide CMHC management information system. An analysis of the constraints in the State system showed that it would require several years to incorporate all the relevant cost-effectiveness components. Thus, priorities were set for immediate action. Highest priority was assigned to measuring client characteristics, workload, and unit costs. The first result of standardization of this information was to tie unit cost data to the State CMHC funding formula. In this formula, the average unit-cost rate was determined across all State CMHCs. Each center was then reimbursed at this rate for actual services provided to a maximum total dollar amount per agency based upon: (a) the total State dollars available for mental health services, and (b) the proportion of total State service need associated with the agency's catchment area.

For implementation of the other cost-effectiveness components, a two-phase approach would seem feasible. The first phase would involve deriving costs by center by target group and type of center. These cost figures would be transformed into statewide percentile scores, e.g., the 50th percentile cost for treating an adult, lower class, white female neurotic depressive in a rural CMHC might be $300. State funding for such a client might then be set by unit-cost reimbursement for services, up to a maximum of the 75th percentile for total cost. Funding an agency by client admission characteristics and diagnosis is similar to the recent development of third-party reimbursement for medical hospitals based upon diagnostic category rather than a daily rate, e.g., $75 for false labor to $9,600 for open heart surgery (Sullivan 1978).

The second phase would consist of deriving standardized outcome scores of a statewide client sample that is representative of each center and each type of target group. The feasibility of this approach was pilot tested in the States of Washington and Oregon by an NIMH-sponsored project (278-77-0029-OP). The results were promising. Once cost and outcome percentile scores by target group are produced by the state-

wide MIS, the evaluation and funding of individual agencies can be tied to the agency's percentile scores.

## Cost Effectiveness and the Total Service Delivery Process

The cost-effectiveness methodology presented in this monograph is conceptualized as a part of an integrated *service delivery system*. This is an increasingly prevalent model for State and Federal mental health care and other human services with the overall goal of providing services which are as need relevant, accountable, and cost effective as possible. The development and maintenance of such service delivery systems are dependent upon a multistep, cyclical process, outlined in figure 10 (Fishman and Neigher 1979). Ten steps are differentiated, as follows:

*Needs Assessment*

- Step 1 is *problem identification*, involving an enumeration of the types and numbers of individuals in a catchment area who have, or who are at high risk of developing, psychological dysfunction.
- Step 2 is *problem prioritization*, involving the establishment of priorities for action among the problems listed in Step 1. Such priorities are necessary because there are almost always fewer funding resources than there are service needs.
- Step 3 is *identification of relevant services by nonmental health agencies* for reducing the prioritized problems established in Step 2. These services include: (a) psychological services delivered by mental health professionals on the staffs of schools, job training agencies, sheltered workshops, correctional institutions, welfare departments, etc.; and (b) nonpsychological services, such as education, job placement, food stamps, supplemental income payments, and public housing, which can have an important impact upon reducing psychological problems.
- Step 4 is the *identification of needed services by mental health agencies*. This process should be based upon: (a) the prioritized problems to be addressed (from Step 2); (b) the availability of resources other than formal mental health services (from Step 3); and (c) evidence of the feasibility and cost effectiveness of different mental health services for reducing different problems.

*Program Development*

- Step 5 is *legislation* for specifying the development and funding of general types of mental health programs (e.g., State mental hospitals and community mental health centers). These programs are generally designed to achieve the goals mentioned earlier, namely, to produce services which are need based, cost effective, and accountable.
- Step 6 is detailed operationalizing of legislation through *regulations* made by the executive branch of government.
- Step 7 is *designing an individual agency's program* within the context of: (a) a needs assessment (Steps 1-4) of the agency's individual catchment area: (b) the structure of the legislation in Step 5; and (c) the executive regulations in Step 6.

*Service Implementation*

- Step 8 is *implementation* of individual agency service programs.

*Evaluation and Feedback*

- Step 9 is *evaluation* of the service programs with regard to their meeting the goals contained in the earlier steps.
- Step 10 is *feedback* of evaluation results to the various individuals involved in steps 1-9, in order to improve the next cycle of needs assessment, program development, implementation, and evaluation.

All 10 steps are necessary for a successful mental health system. For example, legislated funds can only be properly used and needed mental health services properly designed if they are directed toward those individuals with problems and if they take into account relevant services by nonmental health agencies. On the other hand, the best problem identification and prioritization data are not useful unless there is follow-through with sufficient funds and appropriately regulated, designed, and implemented programs. Moreover, there is no way to know whether the services being delivered are problem relevant and cost effective, unless the extent and impact of the services are systematically evaluated, with feedback given to planners, funders, program designers, and service managers.

Each of the steps in figure 10 is carried out by one or more persons in a particular role. Moreover, each of these roles is typically performed by individuals representing a variety of levels of government. This organizational complexity is illustrated in table 20. Adding to this complexity are the need assessment, funding, evaluation, and other functions performed by private groups, such as the Joint Commission on Accreditation of Hospitals (JCAH) and private health insurance companies.

The discussion of the cost-effectiveness model and methodology presented in this monograph has touched upon most of the steps in figure 10 and the organizational complexities in table 20. Examples are given below.

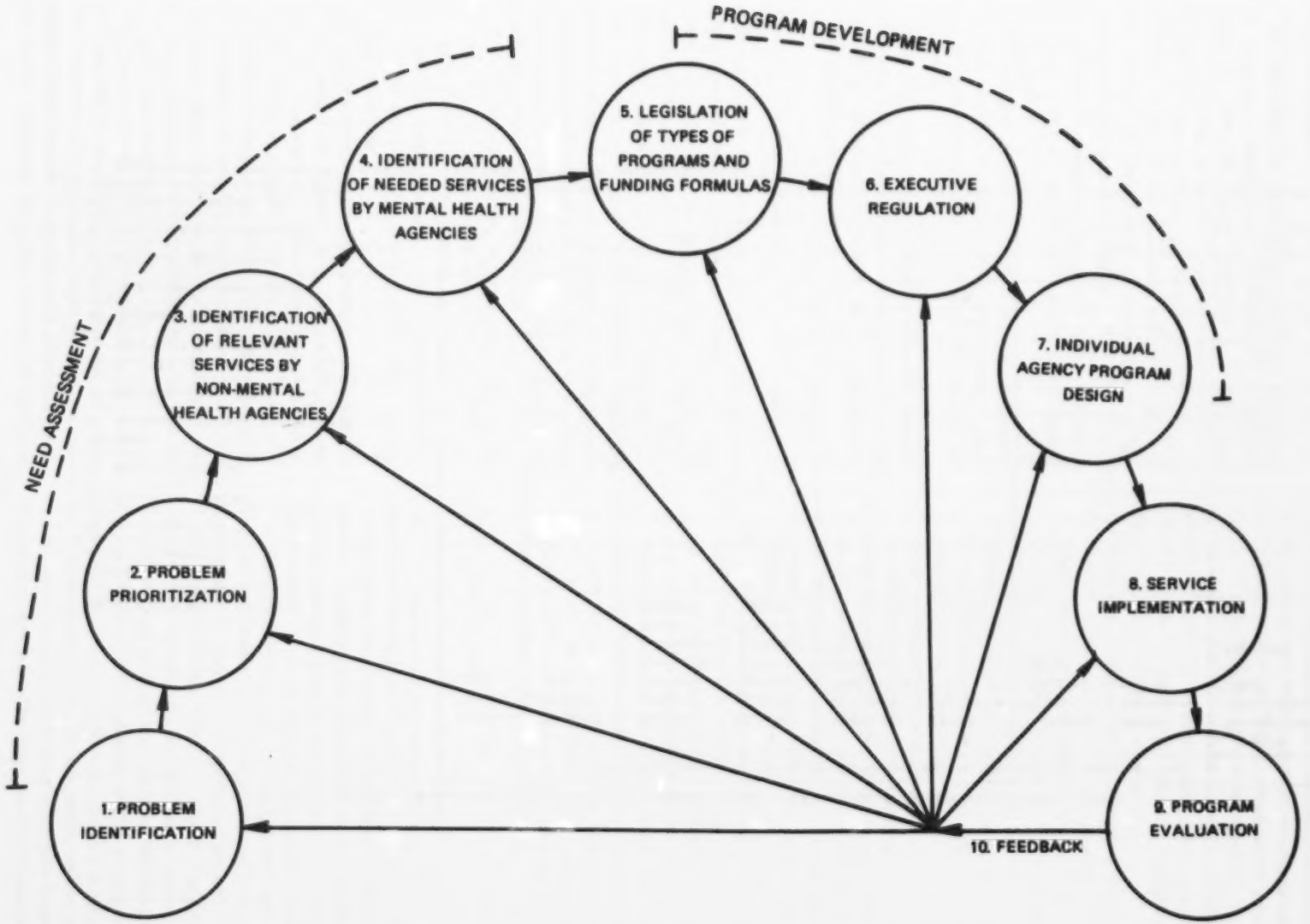
PROGRAM DEVELOPMENT
NEED ASSESSMENT
1. PROBLEM IDENTIFICATION
2. PROBLEM PRIORITIZATION
3. IDENTIFICATION OF RELEVANT SERVICES BY NON-MENTAL HEALTH AGENCIES
4. IDENTIFICATION OF NEEDED SERVICES BY MENTAL HEALTH AGENCIES
5. LEGISLATION OF TYPES OF PROGRAMS AND FUNDING FORMULAS
6. EXECUTIVE REGULATION
7. INDIVIDUAL AGENCY PROGRAM DESIGN
8. SERVICE IMPLEMENTATION
9. PROGRAM EVALUATION
10. FEEDBACK

**Figure 10. Steps involved in the development and maintenance of a mental health service delivery system**

**Table 20. Illustrative Roles Required for Development and Maintenance of a State Mental Health Service Delivery System[1]**

| GOVERNMENTAL LEVELS | STEPS REQUIRED FOR DEVELOPMENT AND MAINTENANCE OF THE SYSTEMS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1. Problem Identification | 2. Problem Prioritization | 3. Identification of Relevant Services By Nonmental Health Agencies | 4. Identification of Needed Services By Mental Health Agencies | 5. Legislation of Types of Programs & Funding Formulas | 6. Executive Regulation | 7. Individual Agency Program Design | 8. Service Implementation | 9 & 10. Management Information System and Feedback |
| *Legislative* | | | | | | | | | |
| A. U.S. Congress | | | | | X | | | | |
| B. State Legislature | | | | | X | | | | |
| C. County Freeholders | | | | | X | | | | |
| D. Municipal Councils | | | | | X | | | | |
| *Executive* | | | | | | | | | |
| E. National Institute of Mental Health | X[2] | X | X | X | | X | | | X |
| F. DHEW Regional Office | X | X | X | X | | X | | | X |
| G. State Department or Division of Mental Health | X | X | X | X | | X | | | X |
| H. Regional HSA Board | X | X | X | X | | X | | | X |
| I. County Mental Health Board | X | X | X | X | | X | | | X |
| J. Individual Agency Board | X | X | X | X | | | X | | X |
| K. Individual Agency Managers | X | X | X | X | | | X | X | X |

[1] From Fishman and Neigher, 1979.

[2] Each cell of this matrix consists of a possible role in a State mental health service delivery system. For example, the cell formed by Row G and Column 1 consists of Problem Identification tasks performed by the State division of mental health. X's are placed in those cells that in fact usually exist for State mental health systems.

### Needs Assessment

In discussing the rationale for a generic-dimensional interview to assess service effectiveness,[1] we pointed out that, when this type of interview is used to assess the functioning level of a representative sample of catchment area residents, of identified CMHC clients at intake, and of former clients at followup, comparisons among the functioning of these various groups can then answer such questions as:

- What percentage of the nonclient population is functioning at the same level as identified patients at intake?
- Is the distribution of types of functional impairment in the community similar to the distribution of types of functional impairment of clients at intake?
- To what extent does the functioning of former clients at followup improve relative to their functioning at intake and approach the average level of functioning in the community?

### Funding and Regulation

Steps 5 and 6 in figure 10 focus upon the methods by which mental health services are funded and regulated, with the general goal of producing mental health services which are as need relevant, cost effective, and accountable as possible. The cost-effectiveness model is particularly well suited to supporting these two steps. In terms of funding, the model generates information to operate two of the most sophisticated reimbursememt mechanisms, fee-for-service and payment-per-client-type, as follows:

- The unit-cost information generated in the model (cf., figure 7, Step F) can be employed to fund an agency on a fee-for-service basis, which involves deriving reimbursement by multiplying the number of service units received times the relevant unit-cost rate.
- The cost-determination information generated by the model (cf. figure 7, Step G) can be employed to fund an agency by client admission characteristics. This approach is being adopted more and more by third-party payors for medical hospital expenses. It involves reimbursement based not upon a daily room rate, but rather upon diagnostic category, e.g., $75 for false labor to $9,600 for open heart surgery (Sullivan 1977).

In chapter II, pp. 14-17, we presented a percentile-score model of cost-effectiveness evaluation, in which the treatment of a particular target group by a particular CMHC can be compared with other comparable CMHC treatment programs in terms of standardized percentile scores of cost and effectiveness. For example, the cost and effectiveness of the overall clinical services of a particular CMHC which serves an inner-city area in the Northeast could be compared, via percentile scores, with the overall clinical services of all other such CMHCs. If such information were available,[2] it might be used for establishing legislative and regulatory standards for decisionmaking.

- When comparing among similar types of CMHCs, Federal, State, and local government officials might want to build in positive financial incentives for those centers which were below 20 percent on cost and/or above 80 percent on outcome.
- Health insurance companies might employ the percentiles as a basis for determining benefits. For example, if the 75th percentile cost for the treatment of clients with a diagnosis of schizophrenia was $1,000, a company might set this dollar figure as the maximum of its benefits for such clients. Also, a company might decide to reimburse any CMHC which had an outcome percentile above 15 percent when compared with similar types of CMHCs.
- A CMHC board might employ the percentiles of similar types of CMHCs as a basis for monitoring its own center's services. For example, consistent cost percentiles below 40 percent together with consistent outcome percentiles above 60 percent might warrant the board's giving the center's executive director a bonus. Or, a board might use the percentiles to set annual center goals; e.g., a goal could be to raise the center's overall outcome rate from 45th to 50th percentile.

### Specifying Services

Steps 3, 4, 7, and 8 in figure 10 all involve the identification and/or measurement of mental health services. An endemic problem with these steps is that different management groups use different typologies of services, causing great inefficiency of data collection and noncomparability of the resultant information. For example, in the illustration in table 20, there are 17 different cells that are typically associated with Steps 3, 4, 7, and 8; and it is not unusual for each of these to have its own unique typology of service.

The Organizational Matrix in figure 9 suggests a way in which an agency's services can be multidimensionally defined to meet the needs of different management groups. The columns of the matrix define services in terms of the delivering division of an agency, thus accommodating the frequently unique internal structure of the individual agency which it uses for its own management. The other two dimensions of the

matrix define services and target groups in generic categories that could be universally adopted by accountability groups, thus allowing for comparability across service agencies and across accountability bodies.

### Program Design

A crucial concept in the cost-effectiveness model is the difference between the outcome of services, which refers to change in a client's functioning that is simply concurrent with the receipt of services, and the effectiveness of those services, which refers to the services' capacity to cause positive change in a client's functioning.[3] Specifically, assessing a group's preservice functioning and comparing it with the group's postservice functioning only yield the change in the group's functioning over time. There is no scientific way of documenting whether this outcome was actually caused by the CMHC services the group received or whether it was caused by other concurrent factors, such as the simple passage of time. However, if two groups of clients who are comparable at admission each receive different brands of CMHC services, any difference between the target groups in the extent to which their functioning changes over the course of treatment can be ascribed to the differences between the services. Thus, if one group of clients receives services A, and another, comparable group of clients receives services B, to the extent that the former group has a more positive outcome than the latter group, services A are more effective than services B.

In short, a necessary requirement for cost-effectiveness analysis between two or more treatment programs is the assumption of comparability of clients at admission to the programs. *Thus, if programs are to be accountable in a cost-effective manner, they must be designed to facilitate comparability of clients at admission to programs.* In the pilot-test studies described in chapter III, the criteria used to justify the assumption of treatment-group similarity between clients receiving Services A vs. B included: (a) matching on demographic and clinical characteristics at intake;[4] (b) matching groups at intake on a variety of client functioning scales;[5] and (c) random assignment of clients to treatment services.[6] Methodologically, the random assignment procedure is more desirable because it is never possible to match clients on all potentially relevant variables. In this regard, it is important to note that, in the random assignment pilot study, determination was made of the extent to which outpatient therapists were assigned clients who were like those in which they specialized. The result was no cost-effective difference in the services delivered to "specialization" vs. "nonspecialization" clients.[7] Thus, at least in some service situations, random assignment would appear to be possible without reducing the cost effectiveness of services.

### Program Evaluation

One of the basic tools of mental health program evaluation is the management information system, which can be defined as "any system of people, equipment, documents, procedures, and communications which gathers, stores, processes, and presents information for the purpose of assisting managers with a variety of managerial functions" (Hagedorn et al. 1976, page 73). Part of the present project included the development of the D*A*R*E information system to implement cost-effectiveness analysis. One of the D*A*R*E design criteria was to build in general management information system functions other than cost-effectiveness analysis per se. Building in these functions was feasible because the derivation of cost-effectiveness information involves the integration of other kinds of data. For example, the D*A*R*E System derives such data as characteristics of clients and staff; client workload; payroll reports; and accounting reports.[8] In fact, designers of management information systems frequently have the experience of "data overload"; i.e., the designer starts asking members of the organization what types of information they would like to have and soon collects a list that would be too expensive to implement in total. Thus, the information system designer needs some criteria for ranking data needs so they can be trimmed down to a size that is operationally feasible for the organization. In the present project, the cost-effectiveness conceptual model provided the means for such a ranking.

### Feedback of Program Evaluation Results

The feedback of program evaluation results is the last step in the planning-implementation-evaluation cycle. Obviously, this is a crucial step in the process. Unless relevant and understandable evaluation feedback reaches decisionmakers, there is no way for them to base their decisions upon the actual performance of service programs. Moreover, every technically knowledgeable CMHC program evaluator has experienced the frustration of dealing with decisionmakers who are not technically knowledgeable, but who eventually make the decisions crucial to the center. This frustration is caused by the communication and information gap between the evaluator and the decisionmaker.

One of the purposes of this monograph, particularly chapters I-III, is to help the technically knowledgeable evaluator communicate with the less technically sophisticated decisionmaker by presenting cost effectiveness in a way that is understandable to that decisionmaker.

## Application of the Cost-Effectiveness Model to the Emerging Human Service Concept

In the United States today there is an increasing trend toward the integration of human services (Lynn 1976; Morrill 1976; Attkisson et al. 1978). One important factor in this trend is the growing recognition that people's service needs are typically interrelated and, therefore, services must be defined for people's problems, not vice versa. For example, physical illness can precipitate depression and depression can also manifest itself in physical symptoms. Some other examples: Mental health consultation can help industrial productivity; poverty can exacerbate family tensions; and childhood emotional problems can interfere with proper education. As a final illustration, the chronically mentally ill traditionally have required psychiatric hospitalization which, in addition to mental health care per se, involves the provision of total human services, including food, shelter, physical health, recreation, and so forth.

Another factor in the growth of the human service concept is "recognition of the inefficiency, fragmentation, barriers to accessibility, gaps in service, and discontinuities characteristic of the present categorical system of funds and service delivery" (Attkisson and Broskowski 1978, p. 16). This factor is particularly salient in light of increasing national concern about excessive taxation and expansion of government programs.

A third factor in the growth of the human service concept is "the recognition of similarities in the specific techniques and activities of help providers" (Attkisson and Broskowski 1978, p. 16). These similarities are very clear in the area of program evaluation, as is excellently elaborated on by Attkisson et al. (1978). In this regard, it is important to observe that the cost-effectiveness model for CMHC services presented in this monograph was explicitly designed to facilitate expansion to all human services. Some examples of how this expansion could take place are briefly described.

### The Definition of a Human Service Organization

In chapter 1, a CMHC was defined as "an organization which establishes contacts between one or more center staff members, who are in a 'giving help' role, and one or more community members, who are in a 'receiving help' role." This definition is generic to any human service organization if the concept of contacts is enlarged to include both: (a) interactional services, in which the basic product offered is a type of social interaction (e.g., support, suggestion, guidance, or education) between the staff member and the client; and (b) material services (e.g., meal services, income maintenance, transportation, housing) dispensed by the agency to the client.

### The Buyer's Guide Model

The cost-effectiveness methodology for mental health presented here was derived from a more general buyer's guide model. As can be seen in table 1, this buyer's guide model can be applied to the evaluation of any definable product, as long as it can be described in terms of its goals, basic components, effectiveness criteria, and cost. Various types of human services are such products.

### Evaluation Steps Required for Cost-Effectiveness Analysis

Figure 7 presents the evaluation steps required to perform a cost-effectiveness comparison between two service target groups. As is clear in the figure, these steps are directly applicable to human services generally, if service contact is expanded to include material services in addition to interactional services.

### Cost Effectiveness and the Total Service Delivery Process

Figure 10 presents the multiple steps involved in the development and maintenance of a mental health service delivery system. With two small revisions, these steps are applicable to any human service delivery system:

- In Step 1, expanding the definition of psychological dysfunction to include dysfunction in a wide range of problems in living, e.g., problems in obtaining sufficient income, education, housing, transportation, and recreational opportunities.
- In Steps 3 and 4, expanding the services involved to include the full range of human service agencies, e.g., employment bureaus, schools, welfare and transportation departments, and childcare centers.[9]

## Summary

The development of mental health care and other human service delivery systems which are need relevant, accountable, and cost effective involves the integration of concepts, procedures, and techniques from a wide variety of fields. Such integration is illustrated in this project, which was designed to develop a cost-effectiveness, decisionmaking model and implementation methodology for CMHCs. The major task in accomplishing this goal was to bring together such traditional areas of psychology as psychological assessment and measurement, research design, psychotherapy outcome research, and the psychology of cognitive judgement with such areas as cost accounting, clinical recordkeeping, computer technology, management information systems, governmental policymaking, and health economics. Moreover, the cost effectiveness methodology that was developed had to meet scientific standards of reliability and validity; administrative standards of feasibility; and decisionmaking standards of clear-cut applicability to real decisionmaking situations.

It is hoped that this work will help to encourage more mental health practitioners, accountants, public administrators, computer systems analysts, and other relevant professionals to apply their basic skills and knowledge to the integration among psychological, accounting, administration, and computer sciences that is necessary for the continuing improvement of mental health and other human service delivery systems.

# Appendixes

## APPENDIX 1: Elaboration of Some Important General Aspects of Cost-Effectiveness Methodology in Community Mental Health

### Emphasis Upon Impact Not Process

*Consumer Reports* judges SLR cameras on their cost, the quality of the pictures they take, and perhaps their durability, not upon the alloy used in making them or the ratio of online workers to supervisors in the factory that produces them. Similarly, one can evaluate CMHC services on their cost and the impact they have upon the CMHC clients, not upon the professional makeup of the staff, the color of the agency's walls, or the brand of car used to take inpatients on trips. Obviously, the CMHC staff have to be concerned with these factors, because they are related to the process of delivering services. However, the purchaser of the services need only be concerned with the ultimate payoff of this process, i.e., the impact of the services upon those who receive them.

### The Methodology Can Be Applied Broadly or Narrowly

For any particular cost-effectiveness analysis, the assessor must decide how narrowly or broadly he wishes to define the product evaluated. Generally, there are two separate dimensions which determine product specificity with respect to mental health services. One dimension is the volume of services involved. Thus, starting with a very narrow focus, one could compare services A and B that were both located within the same administrative unit of a single CMHC. In a progressively broader manner, A and B could involve different administrative units of the same center; different centers in the same State; the group of centers in one State vs. another; and the group of centers in one NIMH region of the country vs. the group of centers in another NIMH region.

Moreover, it is also possible to expand the analysis beyond CMHCs. For example, it is possible to compare among CMHCs, State mental hospitals, private practitioners, university clinics, private hospitals, etc., in their cost and effectiveness in treating severely depressed individuals, schizophrenics, or some other target group. A parallel example in the evaluation of cameras would be to compare systematically the cost and quality of pictures produced by SLR cameras vs. non-SLR 35mm cameras vs. non-35mm cameras.

The other dimension associated with product specificity in a mental health cost-effectiveness analysis involves the degree of particularity in defining target groups of clients. A very narrow focus might limit the analysis to Anglo, male, adult paranoid schizophrenics over the age of 40 who have an annual income of less than $5000. A much broader focus would be all clients admitted to a center over the course of a year.

### The Methodology Deals With Questions of Cost Effectiveness, Not Cost Benefit*

Cost-benefit analysis is generally defined as a technique which attempts to specify and evaluate the social costs and social benefits of different investment projects, to help decide which of the projects has a greater claim to limited resources. In order to make a meaningful comparison between different projects, it is necessary to reduce the various social costs into one set of common units and the various social benefits into the same or another set of common units. Usually, when dealing with health, education, welfare, job-training, and other human service programs, it is fairly straightforward to reduce the social cost of various projects to the common denominator of money. In contrast, the reduction of the social benefits of such programs to a common denominator is very problematical. To illustrate some of the problems involved, consider Rivlin's (1971) example of a situation in which there are two different ongoing publicly sup-

*This section is adopted from a paper by Fishman (1975*b*). The reader is referred to this paper and to Rivlin (1971) for a more technical discussion of the problems associated with cost-benefit analysis.

ported programs, one whose goal is to teach poor children to read and one whose goal is to find a cancer cure. Each program asks for additional funds, yet such funds are limited so that only one program can receive them. The question asked of cost-benefit analysis is whether the additional funds should go to the reading program or to the cancer program.

Rivlin points out one of the many problems in answering this question:

> The private benefits of different types of social action programs may go to entirely different groups of people. People who have cancer are not the people who cannot read. Even if we knew that the benefit-cost ratio was higher for reading programs than for cancer programs, we would not necessarily choose to devote more resources to reading. The decision would depend in part on the values attached to benefiting cancer victims and illiterates (1971, p. 58).

Another aspect of this same issue further complicates the problem. It is probably true that better cost-benefit ratios are obtained for health programs with less sick individuals; for education programs with brighter students; and for job-training programs with more skilled trainees. However, it would not seem reasonable to then conclude that health, education, and labor programs should be funded only for brighter, more skilled, and less sick individuals.

As Rivlin and others point out, there is an application of cost-benefit analysis which does not run into the "common unit of benefit" problem discussed above. This occurs when a comparison is made of the relative effectiveness of different social programs for groups composed of the same type of individuals who have the same target problems. Since the target problems are the same, whatever measurement of benefit is employed for one group is applicable to other groups. This type of analysis is what we have here called "cost-effectiveness" analysis. Following the definition of cost-benefit analysis mentioned at the beginning of this section, we can now define cost-effectiveness analysis generally as a technique which attempts to specify and evaluate the social costs and benefits of different investment projects, to help decide which of the projects should be undertaken *when the projects involve the same type of target population and have identical goals.*

### The Methodology Distinguishes "Outcome" From "Effectiveness"

In the present view of mental health service evaluation, an important distinction is made between (a) the "outcome" of services, which here simply refers to *change per se* in a client's functioning that is concurrent with receipt of the services; and (b) the "effectiveness" of those services, which here refers to the services' capacity to *cause* positive change in the client's functioning. From figures 1 and 2 we can see that assessing a group's preservice functioning and comparing it with the group's postservice functioning only yields the change in the group's functioning between time 1 and time 3. From a technical point of view, there is no way of scientifically documenting whether this change or outcome was actually caused by the CMHC services the group received, or whether it was caused by other concurrent factors in the group, e.g., the simple passage of time.

Effectiveness, on the other hand, is a casual concept and implies the use of an explicit, experimental research design. As this term has been used in the discussion so far, the effectiveness of a particular brand of CMHC services has meant the degree to which the services can actually *cause* positive changes or outcomes in a target group's functioning. Specifically, if two target groups of clients who are comparable at admission each receive different brands of CMHC services, any differences between the target groups in the extent to which their functioning changes over the course of treatment can be ascribed to the differences between the services. This is because the only systematic difference between the two groups is the difference in the treatments they have received. Any other factors that might be related to change in functioning over time can be considered equally powerful in both groups. In other words, these other factors are "randomized" or "controlled" when the two groups are compared.

To illustrate the interrelationship between outcome and effectiveness, suppose two representative groups of clients with severe neurotic depression were seen at a particular CMHC. Each group was seen in individual therapy for 2 months and then, on the basis of a 3-month followup interview, each group was objectively rated along a seven-point change scale ranging from "1—Much Worse Now Compared to Status at Intake," to "7—Much Better Now Compared to Status at Intake." Consider the following two hypothetical statements:

- The severe neurotic depressives in group 1 were each seen by a paraprofessional at an average center cost of $90, and these patients obtained an average outcome rating of "6—Moderately Better Now Compared with Status at Intake."
- The severe neurotic depressives in group 2 were

seen by a psychiatrist at an average center cost of $180, and these patients also obtained an average outcome rating of "6—Moderately Better Now Compared with Status at Intake."

Cost-effectiveness analysis of these data is straightforward, with a conclusion that the paraprofessional treatment was less costly but as effective for treating a representative sample of clients with severe neurotic depression.

Cost-effectiveness analysis can thus be defined as the comparison of two or more statements about the same type of target group, with each statement summarizing the cost and outcome per target group member associated with the contact services directed toward the target group. In the present conceptualization, such statements are called "cost-outcome" statements. Examples of cost-outcome statements are the two hypothetical statements presented above about groups of clients with severe neurotic depression, and these statements *taken together* constitute a cost-effectiveness analysis.

Cost-outcome statements for a CMHC, then, can be viewed as a summary of the answers to three questions about the contact services of the center:

- What types of clients are being served, i.e., what are the characteristics of the target group members toward whom the contacts are directed? (For both illustrative cost-outcome statements above, the answer to this question is "severe neurotic depressives.")
- On the average, how much do the services cost in dollars per target group member? (In the two statements above, the answer to this question is $90 and $180, respectively.)
- On the average, what is the outcome per target group member, i.e., how much change does each member manifest between his initial, preservice functioning and his followup, postservice functioning? (For both statements above, the answer to this question is "6—Moderately Better Now Compared with Status at Intake.")

In summary, then, the *effectiveness* of A vs. B CMHC services can be defined in terms of a comparison between the service outcome of a target group who is exposed to services A, and the service outcome of the same type of target group who is exposed to services B.

Because of the importance of the cost-outcome vs. cost-effectiveness distinction in the present conceptualization, this view has been named the "Cost-Outcome/Cost-Effectiveness" Model, or the C*O*C*E Model.

### Results From the Methodology May Be Sensitive to the Time Between the Start of Service and the Followup Assessment

Figure 1 and page 5 depict how mental health services are instigated at a particular point in time in order to effect a change in the client's functioning at a later point in time. Thus, mental health services can be evaluated in terms of their capacity to effect a positive change between the client's initial, preservice functioning and his followup, postservice functioning. This section focuses upon issues associated with the length of time between initial and followup assessment.

As described in the previous section, cost-effectiveness analysis can be seen as a comparison of the cost and outcome of two or more groups of comparable clients who are assigned to different treatments (or what we have called different brands of CMHC services). It seems clear that the time period between admission and followup must be held constant across the various target groups of clients being compared. This equates the various groups for the effect of the passage of time between admission and followup and thus rules out the possibility that differences between the groups on cost and/or outcome could be due to differences in the time that has elapsed between admission and followup. This is not to say that frequently a followup time is chosen so that, at followup, some clients are terminated from treatment and other clients are still in treatment. However, this difference between clients is taken into account by the "Independence from Mental Health Services" criterion in tables 2 and 3. This criterion reflects the extent to which a client is receiving mental health services at followup and is one of the determinants of the final rating of overall outcome and effectiveness.

Cost-outcome or cost-effectiveness statements must be qualified by the time context of the associated outcome assessment procedures. For example, suppose a group of neurotic depressives is randomly assigned at admission to Treatment A or Treatment B, and at followup 3 months later Treatment A is found to be $100 more expensive but also 50 percent more effective in reducing depression. The following statement can then be made: "The additional expense of Treatment A will increase the extent to which depression can be reduced *during the first 3 months after admission*." The cost and impact of Treatment A relative to Treatment B *after* the 3 months is not known until further followups are completed. For example, at 6 months followup, it would be possible to find that Treatment

A was actually less expensive across the 6 months as a whole than Treatment B, or that Treatment A was actually less effective in reducing depression across the 6 months as a whole. Thus it can be seen that, ideally, the decisionmaker should have data from multiple followups so that a graph can be generated in which the relative cost and effectiveness of various treatments are shown as a function of varying time periods between admission and followup. Such a graph can be important, since there are numerous examples in which programs require a high initial cost in order to achieve a long-term effect, an effect which does not manifest itself until 1 year or more later.

In light of the time context limitations on the meaning of a particular outcome assessment, the earlier-discussed definition of cost-effectiveness can now be defined as the comparison of two or more cost-outcome statements, with each such statement a summary of the answers to three revised questions about the contact services of a CMHC:

- What types of individuals are being served: i.e., what are the characteristics at admission of the target group members toward whom the contacts are directed?
- On the average, how much do the services cost in dollars per target group member over a specified period of time (i.e., over the period of time between the beginning of services and followup)?
- On the average, what is the outcome per target group member over a specified period of time (i.e., over the period of time between the beginning of services and followup)?

## APPENDIX 2: Design Criteria Employed in Developing the D*A*R*E System

1. *Capacity for Cost-Effectiveness Analysis*
   The system must be capable of performing the types of data collection, storage, and analysis tasks outlined in Evaluation Steps A-J in figure 7.
2. *Computerization*
   For the most efficient and reliable data storage and retrievability in most CMHCs, the system must be computerized. However, for some small centers, the system must also be adaptable to manual operation.
3. *Cost, Efficiency, Simplicity*
   To maximize the system's economic and operational feasibility for the widest variety of CMHCs, it should be inexpensive, efficient, and uncomplicated to run at each relevant step:
   – Data collection, particularly in terms of clinician time
   – Data preparation for computer
   – Computer data storage
   – Data retrieval via computer printouts
   In line with this criterion, the system should be designed to run employing batch processing with a relatively small, simple, and inexpensive computer; and the programs should be written in simple language. Moreover, for some small centers, the system must also be adaptable to manual operation.
4. *Nonintrusiveness*
   The system should be as nonintrusive as possible into ongoing treatment activities. The existence of the system must not have any direct impact on the way treatment activities are conducted.
5. *Generic System*
   The fact that the system must be generic to CMHCs means that it must be applicable to a wide variety of organizations. It is important to note that this criterion must be viewed within the context of criterion (3), for frequently it is more inexpensive, efficient, and uncomplicated to design a system which is specific to one particular organization. Thus, criteria (3) and (5) might be summarized as follows: The system must be as inexpensive, efficient, and uncomplicated a generic system as possible.
6. *Theoretical Neutrality*
   Different CMHCs employ different theoretical models in their treatment programs. For example, some use a psychoanalytic model with concepts like "unconscious wish," ego strength," and "transference," while others use a behavior modification model with concepts like "reprograming contingencies," "self-charting of behavior," and "generalization of behavior." Since the system must be generic, it must be appropriate for both of these types of CMHCs and other types as well. Thus, the system must be "theoretically neutral," i.e., it must be built upon concepts and definitions which are not specific to a particular treatment theory. For example, all mental health workers, regardless of theoretical preference, would agree that patients are seen in "contacts" for a particular length of "time" and that worthwhile "treatment outcomes" can involve variables such as reduced alcohol abuse, increased productivity at work, reduced disruption in family relationships, reduced emotional distress, and reduced disorders of thinking.
7. *Built-in Management and Clinical Records Data Other Than Cost-Effectiveness Analysis Per Se*
   To derive cost-effectiveness data involves integrating other kinds of data, such as general accounting, workload stastistics, and staff time allocations. Therefore, it should be possible to derive data from the system other than cost-effectiveness analysis per se which would be helpful in aiding management (such as monthly staff time allocations and client workload) and in generating clinical records (such as documentation of clinical contacts).
8. *Additional Management and Clinical Records Data*
   Where additional management and clinical records information can be obtained and processed by the system for minimal extra cost and effort, this should be built in to reduce the overall paperwork of the center.
9. *Compatibility With Federal, State, Local Data Requirements*
   In designing the process data to be generated by the system, as described in criteria (7) and (8) above, priority should be given to items and variables that are compatible with Federal, State, and local reporting requirements.

*10. Flexibility for Change*

The system should be flexible so that it can easily be adapted to changing conditions. This flexibility should be reflected in overall design philosophy, forms design, data processing technique, and system output.

*11. Modular Construction*

As much as possible, within the constraints of the above-mentioned criteria, the system should be constructed of independent, interlocking modules. This would increase the overall usability and flexibility of the system. Specifically, in addition to utilization of the complete system, such a modular construction would allow for two alternative uses of the system:

- A delimited use of one or more specific modules to perform discrete information functions.
- The introduction of the total system by time-stepped phases. For example, a center could divide the modules into six groups, with each group being sequentially integrated into the center at 6-month time points over a 3-year period.

## APPENDIX 3: The C*O*C*E Adult Interview

A. THE QUESTIONS I'LL BE ASKING YOU TODAY WILL BE ABOUT HOW THINGS HAVE BEEN GOING FOR YOU OVER THE LAST FOUR WEEKS. SINCE MANY OF THESE QUESTIONS WILL CONCERN THIS LAST MONTH, IT MAY BE HELPFUL FOR YOU TO SPEND A FEW MINUTES NOW THINKING BACK OVER THE MONTH. LET'S SEE, TODAY IS _____, SO FOUR WEEKS AGO WOULD BE ABOUT _____, (PAUSE). NOW, THAT'S THE TIME SPAN WE'LL BE TALKING ABOUT.

B. BEFORE WE GET STARTED, I WOULD LIKE TO LIST ALL THE PEOPLE WHO LIVE IN YOUR HOUSEHOLD WITH YOU. LET'S SEE, BESIDES YOURSELF, WHO ELSE LIVES WITH YOU? LET'S TAKE THEM IN ORDER OF AGE. (Continue listing all household members).

C. HOW ABOUT ANY LODGERS OR ROOMERS WHO LIVE WITH YOU? (If yes, add to the listing).

D. HOW ABOUT ANY CHILDREN OR ANYONE ELSE WHO LIVES WITH YOU--ANYONE AWAY TRAVELING, IN A HOSPITAL, VISITING SOMEWHERE, OR ANYTHING? (If yes, add to listing).

| FIRST NAME | LAST NAME | RELATIONSHIP TO RESPONDENT | AGE | SEX |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

E. DO YOU HAVE ANY CHILDREN WHO AREN'T LIVING WITH YOU? If yes, list below. If no, go to item 1.

| NAME | AGE | SEX | NAME | AGE | SEX |
|---|---|---|---|---|---|
| 1. | | | 4. | | |
| 2. | | | 5. | | |
| 3. | | | 6. | | |

Copyright 1974 by Adams County CMHC, Colorado 80022

FIRST, I'D LIKE TO ASK YOU ABOUT YOUR WORK.

| | | |
|---|---|---|
| 1. DO YOU NORMALLY WORK AT A PAYING JOB? | | 1. yes<br>2. no<br>3. no answer or don't know |

If yes: ask items 2 - 5.
If no: ask item 14.

| | | |
|---|---|---|
| 2. WHAT TYPE OF WORK ARE YOU DOING NOW? DO YOU HAVE ANY OTHER PAYING JOBS? WHAT? | | _____<br>_____<br>_____ |
| 3. HOW MANY HOURS PER WEEK DO YOU USUALLY PUT IN FOR "JOB 1"?<br>"JOB 2"?<br>"JOB 3"?<br>TOTAL NUMBER OF HOURS USUALLY WORKED: | | _____ hrs.<br>_____ hrs.<br>_____ hrs.<br>_____ hrs. per week<br>8. no answer or don't know |
| 4. HOW MANY HOURS PER WEEK, ON THE AVERAGE, DID YOU WORK IN THE LAST FOUR WEEKS? | | _____ hrs.<br>8. no answer or don't know |

If number of hours reported in item 4 is less than the total number of hours reported in item 3, ask item 5.

If more than one reason reported in item 5, record number of hours per week for each reason.

| | | |
|---|---|---|
| 5. WHY HAVE YOU BEEN WORKING LESS THESE LAST FOUR WEEKS? | | _____ vacation<br>_____ illness<br>_____ seasonal work<br>_____ less demand for work<br>_____ bereavement leave<br>_____ quit job<br>_____ upset, nervous, worr worried, depressed<br>_____ other _____<br>8. no answer or don't know |

Ask questions 6 - 13, if at least an average of four hours per week of work reported in item 4 (ask about primary job).

| | | |
|---|---|---|
| 6. IN GENERAL, HOW WOULD YOU SAY YOU LIKE YOUR JOB? WOULD YOU SAY - (read categories 1 - 5) | | 1. very much<br>2. some<br>3. so-so<br>4. a little<br>5. not at all<br>8. no answer or don't know |

THROUGHOUT THE INTERVIEW, FOR MANY OF THE QUESTIONS I'LL BE ASKING, YOU'LL BE ABLE TO USE ONE OF THESE SIX ANSWERS (hand respondent card). I'll BE TELLING YOU WHEN TO REFER TO THE CARD. YOU CAN USE THE CARD FOR THESE NEXT FEW ITEMS.

| | | |
|---|---|---|
| 7. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU BEEN LATE OR ABSENT FROM WORK BECAUSE YOU WERE UPSET--YOU KNOW, WORRIED, NERVOUS, OR DEPRESSED? PLEASE REFER TO CARD (if necessary). | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |
| 8. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU HAD TROUBLE DOING THE WORK AT YOUR JOB? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |
| 9. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU GOTTEN ALONG POORLY WITH THE OTHER PEOPLE AT WORK? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |

| | | |
|---|---|---|
| 10. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOUR BOSS OR OTHER PEOPLE AT THE JOB COMPLAINED ABOUT YOUR WORK? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |
| 11. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOUR BOSS OR OTHER PEOPLE AT THE JOB SAID POSITIVE, GOOD THINGS ABOUT YOUR WORK? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |

NOW THIS ISN'T ON THE CARD.

| | | |
|---|---|---|
| 12. IN GENERAL, HOW GOOD A JOB DO YOU THINK YOU DO? WOULD YOU SAY- (Read categories 1 - 5). | | 1. very good<br>2. good<br>3. average<br>4. poor<br>5. very poor<br>8. no answer or don't know |
| 13. OVER THE PAST FOUR WEEKS, ALL IN ALL, HOW HAVE THINGS BEEN GOING AT WORK? WOULD YOU SAY- (Read categories 1 - 5). | | 1. very badly<br>2. somewhat badly<br>3. so so<br>4. fairly good<br>5. very good<br>8. no answer or don't know |
| 14. OVER THE PAST FOUR WEEKS, HAVE YOU RECEIVED ANY INCOME FROM PUBLIC ASSISTANCE, SUCH AS WELFARE, A.D.C., ETC.?<br><br>If yes: WHAT TYPE OF PUBLIC ASSISTANCE HAVE YOU BEEN RECEIVING:<br><br>HOW MUCH INCOME HAVE YOU RECEIVED? | | 1. yes<br>2. no<br>8. no answer or don't know<br>9. not applicable<br><br>type_____<br><br>_____<br><br>_____<br><br>amount received over last four weeks:<br>$_____ |

| | | |
|---|---|---|
| 15. OVER THE PAST FOUR WEEKS, HAVE YOU RECEIVED ANY FOOD STAMPS?<br><br>If yes: HOW MUCH HAVE YOU RECEIVED? | | 1. yes<br>2. no<br>8. no answer or don't know<br>9. not applicable<br><br>amount received over last four weeks:<br>$_____ |

AND NOW, SOME QUESTIONS ABOUT SCHOOL.

| | | |
|---|---|---|
| 16. ARE YOU ENROLLED IN SCHOOL, OR ANY CLASSES OR TRAINING PROGRAM? | | 1. yes<br>2. no<br>8. no answer or don't know |

If no: skip to item 28.

If yes: ask items 17-19 below.

| | | |
|---|---|---|
| 17. HOW MANY HOURS PER WEEK DO YOU USUALLY SPEND IN CLASSES AND STUDYING? | | _____hrs.<br>8. no answer or don't know |
| 18. HOW MANY HOURS PER WEEK, ON THE AVERAGE, DID YOU SPEND IN CLASSES OR STUDYING IN THE LAST FOUR WEEKS? | | ____hrs.<br>8. no answer or don't know |

If the number of hours reported in item 18 is less than the number of hours reported in item 17, ask item 19 below.

| | | |
|---|---|---|
| 19. WHY HAVE YOU BEEN SPENDING LESS TIME IN CLASS AND STUDYING THESE LAST FOUR WEEKS? | | _____vacation<br>_____illness<br>_____easier classes<br>_____bereavement<br>_____busier schedule<br>_____upset, nervous, worried, depressed<br>8. no answer or don't know |

Ask questions 20-27 if at least four hours average per week spent in classes or studying as reported in item 18.
If less than four hours, go to item 28.

| | | |
|---|---|---|
| 20. IN GENERAL, HOW WOULD YOU SAY YOU LIKE YOUR CLASSES? WOULD YOU SAY- (Read categories 1 - 5). | | 1. very much<br>2. some<br>3. so-so<br>4. a little<br>5. not at all<br>8. no answer or don't know<br>9. not applicable |

PLEASE USE THE CARD TO ANSWER THESE.

| | | |
|---|---|---|
| 21. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU BEEN LATE OR ABSENT FROM SCHOOL BECAUSE YOU WERE UPSET- YOU KNOW, WORRIED, NERVOUS OR DEPRESSED? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |
| 22. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU HAD TROUBLE DOING THE WORK ASSIGNED IN SCHOOL? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |
| 23. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU GOTTEN ALONG POORLY WITH THE OTHER STUDENTS IN SCHOOL? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |
| 24. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOUR TEACHERS OR OTHER STUDENTS COMPLAINED ABOUT YOUR WORK? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |
| 25. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOUR TEACHERS OR OTHER STUDENTS SAID POSITIVE, GOOD THINGS ABOUT YOUR WORK? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |

THIS WON'T BE ON THE CARD.

| | | |
|---|---|---|
| 26. IN GENERAL, HOW GOOD A JOB DO YOU THINK YOU DO AT SCHOOL? WOULD YOU SAY- (Read categories 1 - 5). | | 1. very good<br>2. good<br>3. average<br>4. poor<br>5. very poor<br>8. no answer or don't know |
| 27. OVER THE PAST FOUR WEEKS, ALL IN ALL, HOW HAVE THINGS BEEN GOING IN SCHOOL: WOULD YOU SAY- (Read categories 1 - 5). | | 1. very badly<br>2. somewhat badly<br>3. so-so<br>4. fairly good<br>5. very good<br>8. no answer or don't know |

NOW, I'D LIKE TO ASK YOU ABOUT HOUSEHOLD TASKS. BY HOUSEHOLD WORK, I MEAN THINGS LIKE PLANNING AND COOKING MEALS; DOING THE LAUNDRY; CLEANING THE HOUSE; SHOPPING; DRIVING; SEWING; GENERAL HOUSEHOLD MAINTENANCE LIKE FIXING THE CAR; PLUMBING; ELECTRICAL APPLIANCES; YARD WORK; MANAGING THE HOUSEHOLD FINANCES--THAT SORT OF THING.

| | |
|---|---|
| 28. ABOUT HOW MANY HOURS PER WEEK DO YOU USUALLY SPEND DOING SUCH TASKS? | 1. _____ hrs.<br>8. no answer or don't know |
| 29. HOW MANY HOURS DID YOU SPEND DOING HOUSEKEEPING TASKS LAST WEEK? | 1. _____ hrs.<br>8. no answer or don't know |

If the number of hours reported in item 29 is less than the number of hours reported in item 28, ask item 30 below. If not less, go to item 31. If "no hours" in response to item 29, go to item 45.

| | |
|---|---|
| 30. WHY HAVE YOU BEEN SPENDING LESS TIME DOING HOUSEHOLD TASKS THIS LAST WEEK: | _____ vacation<br>_____ physical illness<br>_____ weather condition<br>_____ change in family composition<br>_____ busier schedule<br>_____ gotten help<br>_____ upset, nervous, worried, depressed<br>_____ other _____<br>8. no answer or don't know |
| 31. YOU'VE MENTIONED YOU SPENT ABOUT _____ HOURS LAST WEEK DOING HOUSEHOLD TASKS. ABOUT HOW MUCH OF THE TOTAL HOUSEKEEPING FOR YOUR FAMILY (YOUR HOUSEHOLD, YOURSELF) WOULD YOU SAY YOU DID OVER THE LAST FOUR WEEKS? | 1. almost all or total<br>2. around 3/4<br>3. around 1/2<br>4. around 1/4<br>5. some but less than 1/4<br>6. none<br>8. no answer or don't know |

If at least an average of four hours per week in household tasks reported in item 29, ask items 32-43. If less than an average of four hours per week, go to item 45.

best copy available

NOW, ABOUT THE HOUSEHOLD WORK YOU DO--

| | |
|---|---|
| 32. IN GENERAL, HOW WOULD YOU SAY YOU LIKE THE HOUSEKKEPING THAT YOU DO? WOULD YOU SAY- (Read categories 1 - 5). | 1. very much<br>2. some<br>3. so-so<br>4. a little<br>5. not at all<br>8. no answer or don't know |

NOW I'M GOING TO ASK YOU ABOUT ANY PROBLEMS YOU MAY HAVE HAD WITH DOING HOUSEKEEPING TASKS. BY PROBLEMS, I MEAN THAT YOU HAD DIFFICULTY DOING THE WORK, NOT JUST THAT YOU DIDN'T LIKE DOING IT.

| | |
|---|---|
| 33. OVER THE PAST FOUR WEEKS, HAVE YOU DONE ANY PLANNING FOR, COOKING, OR CLEANING UP AFTER A MEAL? | 1. yes<br>2. no<br>8. no answer or don't know<br>9. not applicable |
| If yes: HOW OFTEN HAVE YOU HAD TROUBLE DOING THESE THINGS? FROM YOUR CARD | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 34. OVER THE PAST FOUR WEEKS, HAVE YOU DONE ANY OF THE CLEANING OF THE HOUSE? | 1. yes<br>2. no<br>8. no answer or don't know<br>9. not applicable |
| If yes: HOW OFTEN HAVE YOU HAD TROUBLE WITH THE CLEANING? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | | |
|---|---|---|
| 35. OVER THE PAST FOUR WEEKS, HAVE YOU BEEN RESPONSIBLE FOR TAKING CARE OF ANY OF THE CLOTHES--THE LAUNDRY, IRONING, SEWING, ETC.?<br><br>If yes: HOW OFTEN HAVE YOU HAD TROUBLE WITH THIS IN THE LAST FOUR WEEKS? FROM YOUR CARD (if necessary) | | 1. yes<br>2. no<br>8. no answer or don't know<br>9. not applicable<br><br>1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 36. OVER THE PAST FOUR WEEKS, HAVE YOU DONE ANY HOUSEHOLD SHOPPING?<br><br>If yes: HOW OFTEN HAVE YOU HAD TROUBLE SHOPPING OR DRIVING TO SHOPS? | | 1. yes<br>2. no<br>3. no answer or don't know<br>4. not applicable<br><br>1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 37. OVER THE PAST FOUR WEEKS, HAVE YOU DONE ANY OF THE YARD WORK, LIKE WATERING, SHOVELING SNOW, RAKING, ETC?<br><br>If yes: HOW OFTEN HAVE YOU HAD TROUBLE DOING THE YARD WORK? | | 1. yes<br>2. no<br>8. no answer or don't know<br>9. not applicable<br><br>1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 38. OVER THE PAST FOUR WEEKS, HAVE YOU BEEN RESPONSIBLE FOR ANY HOUSEHOLD MAINTENANCE--FIXING THE CAR, THE PLUMBING, ELECTRICAL APPLIANCES, ETC.?<br><br>If yes: HOW OFTEN HAVE YOU HAD PROBLEMS WITH DOING THE HOUSEHOLD MAINTENANCE? | | 1. yes<br>2. no<br>8. no answer or don't know<br>9. not applicable<br><br>1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | | |
|---|---|---|
| 39. OVER THE PAST FOUR WEEKS, HAVE YOU BEEN RESPONSIBLE FOR MANAGING ANY OF THE HOUSEHOLD FINANCES--PAYING BILLS, BALANCING A CHECKBOOK,ETC.? | | 1. yes<br>2. no<br>3. no answer or don't know<br>4. not applicable |
| If yes: HOW OFTEN HAVE YOU HAD TROUBLE MANAGING THE FINANCES IN THE LAST FOUR WEEKS? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

Ask items 40 and 41 only if respondent doesn't live alone

| | | |
|---|---|---|
| 40. OVER THE PAST FOUR WEEKS, HOW OFTEN HAS YOUR FAMILY (THE OTHER MEMBERS OF YOUR HOUSEHOLD) COMPLAINED ABOUT THE WAY YOU DO HOUSEHOLD TASKS? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 41. OVER THE PAST FOUR WEEKS, HOW OFTEN HAS YOUR FAMILY (THE OTHER MEMBERS OF YOUR HOUSEHOLD) SAID POSITIVE, GOOD THINGS ABOUT THE WAY YOU DO HOUSEHOLD TASKS? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| THIS IS NOT ON THE CARD | | |
| 42. IN GENERAL, HOW GOOD A JOB DO YOU THINK YOU DO WITH THE HOUSEHOLD TASKS? WOULD YOU SAY - (Read categories 1 - 5). | | 1. very good<br>2. good<br>3. average<br>4. poor<br>5. very poor<br>8. no answer or don't know |

| | |
|---|---|
| 43. OVER THE PAST FOUR WEEKS, ALL IN ALL, HOW HAVE THINGS BEEN GOING WITH YOUR HOUSEHOLD TASKS? WOULD YOU SAY - (Read Categories 1 - 5) | 1. very badly<br>2. somewhat badly<br>3. so-so<br>4. fairly good<br>5. very good<br>8. no answer or don't know |

If no job or school role (less than four hours per week at job or school), ask item 44. If job or school role, go to item 45.

| | |
|---|---|
| 44. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU HAD TROUBLE GETTING ALONG WITH THE PEOPLE YOU MEET DURING THE DAY, LIKE NEIGHBORS OR SALES PEOPLE? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |

| | | |
|---|---|---|
| 45. | DO YOU DO VOLUNTEER WORK FOR ANY KIND OF SERVICE ORGANIZATION LIKE HEADSTART, LEAGUE OF WOMEN VOTERS, ROTARY CLUB, LION'CLUB, CHURCH ORGANIZATIONS, BOY SCOUTS, LITTLE LEAGUE, NEIGHBORHOOD ORGANIZATIONS, POLITICAL PARTIES, THAT SORT OF THING? | 1. yes<br>2. no<br>8. no answer or don't know |

If yes: ask items 46 and 47.
If no: go to item 57.

| | | |
|---|---|---|
| 46. | ABOUT HOW MANY HOURS PER WEEK DO YOU USUALLY SPEND IN VOLUNTEER WORK? | _____ hrs.<br>8. no answer or don't know |
| 47. | IN THE LAST FOUR WEEKS, HOW MANY HOURS PER WEEK, ON THE AVERAGE, DID YOU SPEND IN VOLUNTEER WORK? | _____ hrs.<br>8. no answer or don't know |

If number of hours reported in item 47 is less than the number of hours reported in item 46, ask item 48 below.
If not less, go to instruction below item 48.

| | | |
|---|---|---|
| 48. | WHY HAVE YOU BEEN DOING LESS VOLUNTEER WORK IN THESE LAST FOUR WEEKS? | _____ vacation<br>_____ illness<br>_____ seasonal<br>_____ less need<br>_____ bereavement<br>_____ busier schedule<br>_____ upset, nervous, depressed, worried<br>_____ other _____<br>8. no answer or don't know |

Ask questions 49 - 56, if at least an average of four hours per week of volunteer work is reported in item 47.

I'D LIKE TO ASK ABOUT YOUR VOLUNTEER WORK.

| | | |
|---|---|---|
| 49. IN GENERAL, HOW WOULD YOU SAY YOU LIKE YOUR VOLUNTEER WORK? WOULD YOU SAY- (Read categories 1 - 5). | | 1. very much<br>2. some<br>3. so-so<br>4. a little<br>5. not at all<br>8. no answer or don't know |
| 50. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU NOT DONE YOUR VOLUNTEER WORK BECAUSE YOU WERE UPSET--YOU KNOW, WORRIED, NERVOUS OR DEPRESSED?-FROM YOUR CARD | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 51. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU HAD TROUBLE DOING THE VOLUNTEER WORK? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |
| 52. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU GOTTEN ALONG POORLY WITH THE OTHER PEOPLE WITH WHOM YOU DO VOLUNTEER WORK?-FROM YOUR CARD | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |
| 53. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE OTHER PEOPLE COMPLAINED ABOUT THE WAY YOU DO THE VOLUNTEER WORK? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |

| | | |
|---|---|---|
| 54. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE THE OTHER PEOPLE SAID POSITIVE, GOOD THINGS ABOUT THE WAY YOU DO THE VOLUNTEER WORK? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |

NOW THIS ISN'T ON THE CARD.

| | | |
|---|---|---|
| 55. IN GENERAL, HOW GOOD A JOB AT THIS VOLUNTEER WORK DO YOU THINK YOU DO? WOULD YOU SAY-(Read categories 1-5) | | 1. very good<br>2. good<br>3. average<br>4. poor<br>5. very poor<br>8. no answer or don't know |
| 56. OVER THE PAST FOUR WEEKS, ALL IN ALL, HOW HAVE THINGS BEEN GOING WITH YOUR VOLUNTEER WORK? WOULD YOU SAY-(Read categories 1 - 5). | | 1. very good<br>2. good<br>3. average<br>4. poor<br>5. very poor<br>8. no answer or don't know |

If respondent has children 18 years of age or under living in household, ask items 60 and 61 below about these children.

If respondent has no children in household but has children living elsewhere, ask item 57 and 58 below.

If no children, skip to item 69.

| | | |
|---|---|---|
| 57. YOU MENTIONED YOU HAVE CHILDREN (A CHILD). ON THE AVERAGE, HOW MANY HOURS PER WEEK DO YOU USUALLY SPEND WITH YOUR CHILDREN (CHILD)? | | ____hrs.<br>8. no answer or don't know |
| 58. HOW MANY HOURS PER WEEK, ON THE AVERAGE, DID YOU SPEND WITH YOUR CHILDREN (CHILD) THESE LAST FOUR WEEKS? | | ____hrs.<br>8. no answer or don't know |

If the number of hours reported in item 58 is less than the hours reported in item 57, ask 59 below.
If not less, go to instructions below item 59.

| | | |
|---|---|---|
| 59. WHY HAVE YOU BEEN SEEING LESS OF YOUR CHILDREN (CHILD) THESE LAST FOUR WEEKS? | | ____vacation (respondent's or child's)<br>____illness (respondent's or child's)<br>____too busy<br>____change in working or school hours<br>____upset, nervous, worried, depressed<br>____other_____<br>8. no answer or don't know |

If at least an average of four hours per week reported in item 58, ask items 63 through 68 below.
If less than four hours, go to item 69.

| | | |
|---|---|---|
| 60. YOU MENTIONED YOU HAVE CHILDREN (A CHILD). HOW MUCH OF THE CARING FOR THE CHILDREN (YOUR CHILD) DO YOU USUALLY DO? WOULD YOU SAY- (Read Categories 1 - 5) | | 1. total or almost all<br>2. most<br>3. about half<br>4. some<br>5. none<br>8. no answer or don't know<br>9. not applicable |

| | | |
|---|---|---|
| 61. OVER THE PAST FOUR WEEKS, HOW MUCH OF THE CARING FOR THE CHILDREN (YOUR CHILD) HAVE YOU DONE? | | 1. total or almost all<br>2. most<br>3. about half<br>4. some<br>5. none<br>8. no answer or don't know<br>9. not applicable |

If the amount of child care reported in item 61 is less than the amount reported in item 60, ask item 62 below.
If not less, go to instructions below item 62.

| | | |
|---|---|---|
| 62. WHY HAVE YOU BEEN DOING LESS OF THE CHILD CARE THESE LAST FOUR WEEKS? | | ____vacation (respondent's or child's)<br>____children staying out of house. why?_____<br>_____<br>____illness<br>____busier schedule<br>____gotten help<br>____change in working or school hours<br>____upset, nervous, worried, depressed<br>____other_____<br>8. no answer or don't know |

If at least some care reported in item 61, ask items 63 through 68.
If no care, go to item 69.

| | | |
|---|---|---|
| 63. IN GENERAL, HOW DO YOU LIKE CARING FOR THE CHILDREN (YOUR CHILD)? | | 1. very much<br>2. some<br>3. so-so<br>4. a little<br>5. not at all<br>8. no answer or don't know |
| 64. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU HAD PROBLEMS TAKING CARE OF THE CHILDREN (YOUR CHILD)? YOU CAN USE THE CARD. | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | | |
|---|---|---|
| 65. WHEN YOU'VE BEEN WITH YOUR CHILDREN (YOUR CHILD), HOW OFTEN HAVE YOU GOTTEN ANGRY WITH THEM AND DONE THINGS LIKE YELLING, SLAPPING, SPANKING OR TAKING AWAY THEIR THINGS? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 66. WHEN YOU'VE BEEN WITH YOUR CHILDREN (YOUR CHILD), HOW OFTEN HAVE YOU ENJOYED THEM? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 67. IN GENERAL, HOW GOOD A JOB OF CARING FOR THE CHILDREN (YOUR CHILD) DO YOU THINK YOU DO? WOULD YOU SAY- (Read Categories 1 - 5) | | 1. very good<br>2. good<br>3. average<br>4. poor<br>5. very poor<br>8. no answer or don't know |
| 68. OVER THE PAST FOUR WEEKS, ALL IN ALL, HOW HAVE YOU BEEN GETTING ALONG WITH YOUR CHILDREN (CHILD)? WOULD YOU SAY-(Read Categories 1-5) | | 1. very badly<br>2. somewhat badly<br>3. so-so<br>4. fairly good<br>5. very good<br>8. no answer or don't know |

69. WHAT IS YOUR PRESENT MARITAL STATUS? (if not obvious from household enumeration)

_____A. not married, under 16 years old: Go to question 78.

_____B. not married (include widowed, divorced), 16 years or more:

a. OVER THE PAST FOUR WEEKS, HAVE YOU HAD A STEADY DATING COMPANION--YOU KNOW, SOMEONE SPECIAL THAT YOU'VE REGULARLY DATED?

_____1) If steady dating companion, ask questions 70 - 77 about steady.

_____2) If no steady, go to question 78.

_____C. married and living together: Ask questions 70 - 77 about wife/husband.

_____D. married and separated, definitely planning divorce:

a. OVER THE PAST FOUR WEEKS, HAVE YOU HAD A STEADY DATING COMPANION--YOU KNOW, SOMEONE SPECIAL THAT YOU'VE REGULARLY DATED?

_____1) If steady dating companion, ask questions 70 - 77 about steady.

_____2) If no steady, go to question 78.

_____E. married and separated, not definitely planning divorce:

a. HOW MUCH TIME HAVE YOU SPENT WITH YOUR WIFE/HUSBAND OVER THE PAST FOUR WEEKS?

_____1) If 12 hours or more, ask questions 70 - 77 about wife/husband.

_____2) If less than 12 hours:

1. OVER THE PAST FOUR WEEKS, HAVE YOU GONE OUT ON ANY DATES OTHER THAN WITH YOUR WIFE/HUSBAND?

(If yes) HAVE YOU HAD A STEADY OR REGULAR DATING COMPANION?

_____A. If steady dating companion, ask questions 70 - 77 about steady.

_____B. If no steady, go to question 78.

NOW I HAVE SOME QUESTIONS ABOUT YOUR RELATIONSHIP WITH YOUR WIFE/ HUSBAND (DATING COMPANION) OVER THE LAST FOUR WEEKS. PLEASE USE THE CARD.

| | |
|---|---|
| 70. OVER THE PAST FOUR WEEKS, WHEN YOU'VE BEEN WITH YOUR WIFE/HUSBAND (HER/HIM), HOW OFTEN HAVE YOU ARGUED WITH HER/HIM? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 71. OVER THE PAST FOUR WEEKS, WHEN YOU'VE BEEN WITH HER/HIM, HOW OFTEN HAVE YOU GOTTEN ANGRY AT HER/HIM AND DONE THINGS LIKE YELLING, SWEARING, HITTING, KICKING, OR THROWING THINGS, GIVING THE "SILENT TREATMENT", CRYING OR SULKING? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 72. OVER THE PAST FOUR WEEKS, WHEN YOU'VE BEEN WITH HER/HIM, HOW OFTEN HAVE YOU ENJOYED BEING WITH HER/HIM? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 73. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU FELT UNCOMFORTABLE WITH YOUR WIFE/HUSBAND (HER/HIM)? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 74. HOW OFTEN HAVE YOU DONE LOVING THINGS FOR YOUR WIFE/HUSBAND (HER/ HIM)--THINGS LIKE COMPLIMENTING HER/HIM, DOING THINGS TO MAKE HER/ HIM HAPPY, GIVING UNEXPECTED GIFTS, SHOWING PHYSICAL AFFECTION LIKE KISSES, HUGS, AND HOLDING HANDS? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

THIS ONE ISN'T ON THE CARD.

| | | |
|---|---|---|
| 75. OVER THE PAST FOUR WEEKS, HOW HAPPY HAVE YOU BEEN WITH YOUR SEXUAL RELATIONSHIP WITH YOUR WIFE/HUSBAND (HER/HIM)? WOULD YOU SAY-(Read Categories 1 - 5), | | 1. very happy<br>2. happy<br>3. indifferent<br>4. unhappy<br>5. very unhappy<br>8. no answer or don't know |
| 76. HOW MUCH DO YOU THINK YOUR WIFE/ HUSBAND (SHE, HE) WOULD BE OF HELP AND SUPPORT TO YOU IF YOU FOUND YOURSELF IN TROUBLE? WOULD YOU SAY-(Read Categories 1 - 5), | | 1. a great deal<br>2. quite a bit<br>3. some<br>4. a little<br>5. none at all<br>8. no answer or don't know |
| 77. OVER THE PAST TWO WEEKS, ALL IN ALL, HOW HAVE YOU BEEN GETTING ALONG WITH YOUR WIFE/HUSBAND (HER/ HIM)? WOULD YOU SAY-(Read Categories 1 - 5), | | 1. very badly<br>2. somewhat badly<br>3. so-so<br>4. fairly good<br>5. very good<br>8. no answer or don't know |

| | | |
|---|---|---|
| 78. IS YOUR MOTHER LIVING? (If not already ascertained from household enumeration) | | 1. yes<br>2. no<br>8. no answer or don't know |

If yes, ask item 79.

If no, go to item 85.

| | | |
|---|---|---|
| 79. OVER THE PAST FOUR WEEKS, HOW FREQUENTLY HAVE YOU SPENT YOUR FREE TIME WITH YOUR MOTHER (SUBSTITUTE MOTHER)?-FROM YOUR CARD | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

If living with mother (from household enumeration) and/or if some time with mother, ask items 80 through 84 below. If not living with mother or if no time with mother, go to item 85.

| | | |
|---|---|---|
| 80. OVER THE PAST FOUR WEEKS, WHEN YOU'VE BEEN WITH YOUR MOTHER, HOW OFTEN HAVE YOU ARGUED WITH HER? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 81. WHEN YOU'VE BEEN WITH YOUR MOTHER, HOW OFTEN HAVE YOU GOTTEN ANGRY AT HER AND DONE THINGS LIKE YELLING, SWEARING, HITTING, KICKING OR THROWING THINGS, GIVING THE "SILENT TREATMENT", CRYING OR SULKING? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 82. WHEN YOU'VE BEEN WITH YOUR MOTHER, HOW OFTEN HAVE YOU ENJOYED HER? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | | |
|---|---|---|
| 83. HOW MUCH WOULD YOUR MOTHER BE OF HELP AND SUPPORT TO YOU IF YOU FOUND YOURSELF IN TROUBLE? WOULD YOU SAY- (Read Categories 1 - 5) | | 1. a great deal<br>2. quite a bit<br>3. some<br>4. a little<br>5. none at all<br>8. no answer or don't know |
| 84. OVER THE PAST FOUR WEEKS, ALL IN ALL, HOW HAVE YOU BEEN GETTING ALONG WITH YOUR MOTHER? WOULD YOU SAY?- (Read Categories 1 - 5). | | 1. very badly<br>2. somewhat badly<br>3. so-so<br>4. fairly good<br>5. very good<br>8. no answer or don't know |

| | | |
|---|---|---|
| 85. IS YOUR FATHER LIVING? (If not already ascertained from household enumeration) | | 1. yes<br>2. no<br>8. no answer or don't know |

If yes, ask item 86.

If no, go to item 92.

| | | |
|---|---|---|
| 86. OVER THE PAST FOUR WEEKS, HOW FREQUENTLY HAVE YOU SPENT YOUR FREE TIME WITH YOUR FATHER (SUBSTITUTE FATHER)? FROM YOUR CARD | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

If living with the father (from household enumeration) and/or if some time with father, ask 87 through 91 below. If not living with the father or if no time with father, go to item 92.

| | | |
|---|---|---|
| 87. OVER THE PAST FOUR WEEKS, WHEN YOU'VE BEEN WITH YOUR FATHER, HOW OFTEN HAVE YOU ARGUED WITH HIM? | | 2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 88. WHEN YOU'VE BEEN WITH YOUR FATHER, HOW OFTEN HAVE YOU GOTTEN ANGRY AT HIM AND DONE THINGS LIKE YELLING, SWEARING, HITTING, KICKING OR THROWING THINGS, GIVING THE "SILENT TREATMENT", CRYING OR SULKING? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 89. WHEN YOU'VE BEEN WITH YOUR FATHER, HOW OFTEN HAVE YOU ENJOYED HIM? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | | |
|---|---|---|
| 90. HOW MUCH WOULD YOUR FATHER BE OF HELP AND SUPPORT TO YOU IF YOU FOUND YOURSELF IN TROUBLE? WOULD YOU SAY - (Read categories 1 - 5). | | 1. a great deal<br>2. quite a bit<br>3. some<br>4. a little<br>5. none at all<br>8. no answer or don't know |
| 91. OVER THE PAST FOUR WEEKS, ALL IN ALL, HOW HAVE YOU BEEN GETTING ALONG WITH YOUR FATHER? WOULD YOU SAY - (Read categories 1 - 5). | | 1. very badly<br>2. somewhat badly<br>3. so-so<br>4. fairly good<br>5. very good<br>8. no answer or don't know |

NEXT, I HAVE SOME QUESTIONS ABOUT YOUR FRIENDS. PLEASE DON'T INCLUDE HERE THE PEOPLE WE'VE ALREADY TALKED ABOUT LIKE YOUR SPOUSE (DATING COMPANION, PARENTS, CHILDREN), BUT DO INCLUDE OTHER RELATIVES: SISTER, BROTHER, AUNT, UNCLE, ETC., IF YOU CONSIDER THEM TO BE FRIENDS.

For items 92 thorugh 98 read in the same sex as the respondent.

| | | |
|---|---|---|
| 92. HOW MANY CLOSE MALE/FEMALE FRIENDS WOULD YOU SAY YOU HAVE? THAT IS, PEOPLE YOU CAN DEPEND ON AND TALK OPENLY WITH? | | 1. 6 or more<br>2. 3 - 5<br>3. 1 - 2<br>4. none<br>8. no answer or don't know |

If at least one close, same-sex friend, ask item 93.

If no close, same-sex friend, ask item 94.

| | | |
|---|---|---|
| 93. OVER THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU SOCIALIZED WITH YOUR CLOSE MALE/FEMALE FRIENDS? FROM YOUR CARD. | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 94. HOW MANY OTHER MALE/FEMALE FRIENDS WOULD YOU SAY YOU HAVE? THAT IS, PEOPLE YOU ENJOY BEING WITH AND FEEL COMFORTABLE AROUND. | | 1. 6 or more<br>2. 3 - 5<br>3. 1 - 2<br>4. none<br>8. no answer or don't know |

If at least one other same-sex friend, ask item 95.

If no other same-sex friend, go to instruction above item 96.

| | | |
|---|---|---|
| 95. OVER THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU SOCIALIZED WITH THESE OTHER MALE/FEMALE FRIENDS? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

If at least one close, same-sex friend, ask items 96 through 98 below. If no close, same-sex friend, but other same sex friend(s), ask items 96 through 98 about other friend(s). If no close or other, same-sex friends, go to instruction below item 98.

| | | |
|---|---|---|
| 96. OVER THE PAST FOUR WEEKS, WHEN YOU'VE BEEN WITH YOUR (CLOSE) MALE/FEMALE FRIENDS, HOW OFTEN HAVE YOU ENJOYED THEM? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 97. HOW MUCH WOULD YOUR(CLOSE) MALE/FEMALE FRIENDS BE OF HELP AND SUPPORT TO YOU IF YOU FOUND YOURSELF IN TROUBLE? WOULD YOU SAY- (Read Categories 1 - 5). | | 1. a great deal<br>2. quite a bit<br>3. some<br>4. a little<br>5. none at all<br>8. no answer or don't know |
| 98. OVER THE PAST FOUR WEEKS, ALL IN ALL, HOW HAVE YOU BEEN GETTING ALONG WITH YOUR (CLOSE) MALE/FEMALE FRIENDS? WOULD YOU SAY- (Read Categories 1 - 5). | | 1. very badly<br>2. somewhat badly<br>3. so-so<br>4. fairly good<br>5. very good<br>8. no answer or don't know |

For items 99 through 105, read in the opposite sex of the respondent.

| | | |
|---|---|---|
| 99. HOW MANY CLOSE FEMALE/MALE FRIENDS WOULD YOU SAY YOU HAVE? | | 1. 6 or more<br>2. 3 - 5<br>3. 1 - 2<br>4. none<br>8. no answer or don't know |

If at least one close, opposite-sex friend, ask item 100.

If no close, opposite-sex friend, ask item 101.

| | | |
|---|---|---|
| 100. OVER THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU SOCIALIZED WITH YOUR CLOSE FEMALE/MALE FRIEND(S)? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | |
|---|---|
| 101. HOW MANY OTHER FEMALE/MALE FRIENDS WOULD YOU SAY YOU HAVE? | 1. 6 or more<br>2. 3 - 5<br>3. 1 - 2<br>4. none<br>8. no answer or don't know |

If at least one other, opposite-sex friend, ask item 102.

If no other, opposite-sex friend, go to instructions above item 103.

| | |
|---|---|
| 102. OVER THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU SOCIALIZED WITH THESE OTHER FEMALE/MALE FRIENDS? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

If at least one close, opposite-sex friend, ask items 103 through 105 below about close friend(s). If no close, opposite-sex friend, but other opposite-sex friend(s), ask items 103 through 105 about other friend(s).

If no close or other opposite-sex friends, skip to item 106.

| | |
|---|---|
| 103. OVER THE PAST FOUR WEEKS, WHEN YOU'VE BEEN WITH YOUR (CLOSE) FEMALE/MALE FRIENDS, HOW OFTEN HAVE YOU ENJOYED THEM? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 104. HOW MUCH WOULD YOUR (CLOSE) FEMALE/MALE FRIENDS BE OF HELP AND SUPPORT TO YOU IF YOU FOUND YOURSELF IN TROUBLE? WOUDD YOU SAY- (Read Categories 1 - 5) | 1. a great deal<br>2. quite a bit<br>3. some<br>4. a little<br>5. none at all<br>8. no answer or don't know |
| 105. OVER THE PAST FOUR WEEKS, ALL IN ALL, HOW HAVE YOU BEEN GETTING ALONG WITH YOUR (CLOSE) FEMALE/MALE FRIENDS? WOULD YOU SAY- (Read Categories 1 - 5). | 1. very badly<br>2. somewhat badly<br>3. so-so<br>4. fairly good<br>5. very good<br>8. no answer or don't know |

WHAT ABOUT OTHER RELATIVES THAT WE HAVEN'T TALKED ABOUT YET--LIKE SISTERS, BROTHERS, AUNTS, UNCLES, ETC.

| | | |
|---|---|---|
| 106. OVER THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU SOCIALIZED WITH OTHER RELATIVES? FROM THE CARD | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

If any contact (1 - 5 above), ask item 107 below.

If no contact, go to item 108.

| | | |
|---|---|---|
| 107. OVER THE PAST FOUR WEEKS, ALL IN ALL, HOW HAVE YOU BEEN GETTING ALONG WITH THESE RELATIVES? WOULD YOU SAY - (Read Categories 1 - 5), | | 1. very badly<br>2. somewhat badly<br>3. so-so<br>4. fairly good<br>5. very good<br>8. no answer or don't know |

| | |
|---|---|
| 108. LET'S SEE, YOU MENTIONED EARLIER THAT YOU LIVE WITH_____(ALONE). OVER THE PAST FOUR WEEKS, ALL IN ALL, HOW HAVE THINGS BEEN GOING IN YOUR HOUSEHOLD? WOULD YOU SAY- (Read Categories 1 - 5). | 1. very badly<br>2. somewhat badly<br>3. so-so<br>4. fairly good<br>5. very good<br>8. no answer or don't know |

I'D NOW LIKE TO ASK YOU ABOUT YOUR FREE TIME OVER THE PAST FOUR WEEKS. PLEASE USE THE CARD.

| | |
|---|---|
| 109. GENERALLY, HOW OFTEN HAVE YOU SPENT YOUR FREE TIME IN AN ENJOYABLE WAY? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. occasionally<br>6. never<br>8. no answer or don't know<br>9. not applicable (no free time) |
| 110. GENERALLY, HOW OFTEN HAVE YOU FELT BORED, UNHAPPY, OR UPSET DURING YOUR FREE TIME? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. occasionally<br>6. never<br>8. no answer or don't know<br>9. not applicable (no free time) |

THESE NEXT QUESTIONS WILL BE ABOUT HOW YOU'VE BEEN FEELING THESE LAST FOUR WEEKS. YOU MAY STILL USE THE CARD FOR ALL THESE QUESTIONS.

| | |
|---|---|
| 111. OVER THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU FELT FEARFUL OR AFRAID? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 112. HOW OFTEN HAVE YOU FELT SAD OR DEPRESSED? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 113. HOW OFTEN HAVE YOU FELT ANGRY? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 114. HOW OFTEN HAVE YOU FELT MIXED UP OR CONFUSED? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 115. HOW OFTEN HAVE YOU FELT TENSE? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | | |
|---|---|---|
| 116. OVER THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU HAD TROUBLE SLEEPING? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 117. HOW OFTEN HAVE YOU HAD TROUBLE WITH POOR APPETITE? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 118. HOW OFTEN HAVE YOU HAD TROUBLE WITH INDIGESTION? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 119. HOW OFTEN HAVE YOU HAD TROUBLE WITH FATIGUE? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 120. HOW OFTEN HAVE YOUR HANDS TREMBLED ENOUGH TO BOTHER YOU? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 121. OVER THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU BEEN TROUBLED BY YOUR HANDS OR FEET SWEATING SO THAT THEY FEEL DAMP AND CLAMMY? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | | |
|---|---|---|
| 122. HOW OFTEN HAVE YOU BEEN BOTHERED BY YOUR HEART BEATING HARD? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 123. HOW OFTEN HAVE YOU BEEN TROUBLED BY "COLD SWEATS"? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 124. HOW OFTEN HAVE YOU BEEN BOTHERED BY ALL SORTS OF AILMENTS IN DIFFERENT PARTS OF YOUR BODY? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 125. OVER THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU FELT WEAK ALL OVER? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 126. HOW OFTEN HAVE YOU HAD SPELLS OF DIZZINESS? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 127. HOW OFTEN HAVE YOU BEEN BOTHERED BY SHORTNESS OF BREATH WHEN YOU ARE NOT EXERTING YOURSELF? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | | |
|---|---|---|
| 128. HOW OFTEN HAVE YOU HAD PERIODS OF DAYS OR WEEKS WHEN YOU COULDN'T TAKE CARE OF THINGS BECAUSE YOU COULDN'T GET GOING? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 129. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU GENERALLY FELT HEALTHY? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

NOW I'LL BE ASKING YOU ABOUT THE WAY YOUR FEELINGS AFFECT YOU. WE ARE STILL TALKING ABOUT THESE LAST FOUR WEEKS. PLEASE USE YOUR CARD.

| | | |
|---|---|---|
| 130. DURING THE LAST FOUR WEEKS, HOW OFTEN HAS WORRY OR NERVOUSNESS GOTTEN YOU DOWN PHYSICALLY? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 131. HOW OFTEN HAS WORRY OR NERVOUSNESS CAUSED PROBLEMS WITH YOUR FAMILY/ PERSONAL LIFE? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 132. HOW OFTEN HAS WORRY OR NERVOUSNESS INTERFERED WITH YOUR SOCIAL ACTIVITIES? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | | |
|---|---|---|
| 133. DURING THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU HAD TO STAY AT HOME OR IN BED BECAUSE OF WORRY OR NERVOUSNESS? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 134. DURING THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU FELT THAT YOU MIGHT HAVE A NERVOUS BREAKDOWN OR THAT YOU MIGHT LOSE YOUR MIND? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

If respondent answers item 134 with "never," go to question 139.

| | | |
|---|---|---|
| 135. DURING THE LAST FOUR WEEKS, HOW OFTEN HAS THIS FEELING GOTTEN YOU DOWN PHYSICALLY? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 136. DURING THE LAST FOUR WEEKS, HOW OFTEN HAS THIS FEELING CAUSED PROBLEMS WITH YOUR FAMILY/ PERSONAL LIFE? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 137. DURING THE LAST FOUR WEEKS, HOW OFTEN HAS THIS FEELING INTERFERED WITH YOUR SOCIAL ACTIVITIES? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 138. DURING THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU HAD TO STAY AT HOME OR IN BED BECAUSE OF THIS FEELING? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

NOW I HAVE SOME QUESTIONS ABOUT THE KINDS OF MOODS YOU'VE BEEN IN OVER THE PAST FOUR WEEKS. PLEASE USE YOUR CARD.

distress- 37

| | | |
|---|---|---|
| 139. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU FELT IN GOOD SPIRITS? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 140. HOW OFTEN HAVE YOU WONDERED IF ANYTHING IS WORTHWHILE ANYMORE? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 141. HOW OFTEN WOULD YOU SAY THINGS DON'T TURN OUT THE WAY YOU WANT THEM TO? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 142. OVER THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU HAD CRYING SPELLS OR FELT LIKE IT? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 143. HOW OFTEN HAVE YOU FELT YOU DIDN'T ENJOY DOING THINGS ANYMORE? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | | |
|---|---|---|
| 144. HOW OFTEN HAVE YOU FELT ALONE AND HELPLESS? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 145. HOW OFTEN HAVE YOU FELT THAT YOUR LIFE IS HOPELESS? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 146. OVER THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU FELT THAT PEOPLE DON'T CARE WHAT HAPPENS TO YOU? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

NOW I'D LIKE TO ASK YOU ABOUT SOME THOUGHTS YOU MAY HAVE HAD IN THE LAST FOUR WEEKS. YOU MAY STILL USE YOUR CARD.

| | | |
|---|---|---|
| 147. OVER THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU FELT THAT SOMEONE HAD CONTROL OVER YOUR MIND? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 148. HOW OFTEN HAVE YOU FELT THAT YOU WERE BEING FOLLOWED? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 149. HOW OFTEN HAVE YOU FELT THAT SOMEONE WAS TRYING TO POISON YOU? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 150. HOW OFTEN HAVE YOU FELT THAT SOMEONE WAS TRYING TO INFLUENCE YOUR MIND? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 151. OVER THE LAST FOUR WEEKS, HOW OFTEN HAVE YOU FELT THAT EVIL SPIRITS POSSESSED YOU? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | |
|---|---|
| 152. HOW OFTEN HAVE YOU HEARD STRANGE THINGS WHEN YOU WERE ALONE? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 153. HOW OFTEN HAVE YOU HAD STRANGE AND PECULIAR THOUGHTS? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 154. HOW OFTEN HAVE YOU FELT AS IF THINGS WERE NOT REAL? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 155. HOW OFTEN HAVE PECULIAR ODORS COME TO YOU? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 156. HOW OFTEN HAVE YOU FELT THAT SOMEONE WAS MAKING YOU DO THINGS BY HYPNOTIZING YOU? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 157. OVER THE PAST FOUR WEEKS, HOW OFTEN HAVE YOU FELT THAT THERE IS SOMETHING WRONG WITH YOUR MIND? | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | | |
|---|---|---|
| 158. HOW OFTEN HAVE YOU FELT THAT IF PEOPLE HAD NOT HAD IT IN FOR YOU, YOU WOULD HAVE BEEN MUCH MORE SUCCESSFUL? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 159. HOW OFTEN HAVE YOU BELIEVED YOU WERE BEING PLOTTED AGAINST? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | | |
|---|---|---|
| 160. NOW OVER THESE SAME LAST FOUR WEEKS WE'VE BEEN TALKING ABOUT, HAVE YOU DRUNK ANY ALCOHOLIC BEVERAGES? | | 1. yes<br>2. no<br>8. no answer or don't know |

If yes to item 160, ask items 161 - 167 below.

If no to item 160, go to item 168.

| | | |
|---|---|---|
| 161. OVER THESE PAST FOUR WEEKS, HOW OFTEN HAVE YOU BEEN INTOXICATED? PLEASE USE YOUR CARD. | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 162. HOW OFTEN HAS YOUR USE OF ALCOHOL CAUSED ANY PROBLEM WITH YOUR SPOUSE? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 163. HOW OFTEN HAS YOUR USE OF ALCOHOL CAUSED ANY PROBLEMS WITH YOUR CHILDREN OR PARENTS? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 164. HOW OFTEN HAS YOUR USE OF ALCOHOL CAUSED ANY PROBLEMS WITH YOUR FRIENDS? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 165. OVER THE PAST FOUR WEEKS, HOW OFTEN HAS YOUR USE OF ALCOHOL CAUSED ANY PROBLEMS WITH YOUR EMPLOYER OR YOUR JOB? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | | |
|---|---|---|
| 166. HOW OFTEN HAS YOUR USE OF ALCOHOL CAUSED ANY PROBLEM WITH THE WAY YOU FEEL ABOUT YOURSELF? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 167. HOW OFTEN HAS YOUR USE OF ALCOHOL CAUSED ANY PROBLEM WITH YOUR PHYSICAL HEALTH? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |

| | | |
|---|---|---|
| 168. OVER THE PAST FOUR WEEKS, HAVE YOU USED ANY OF THE FOLLOWING DRUGS: (Read drugs in list at right). | | _____marijuana<br>_____psychedelics (LSD, mescaline, STP)<br>_____cocaine<br>_____amphetamines (diet pills, speed, ups, crystal)<br>_____barbiturates (sedatives, sleeping pills, downs)<br>_____codeine (including cough syrup)<br>_____methadone<br>_____heroin, opium, morphine<br>8. no answer or don't know |

If any drugs checked in item 168, ask items 169 - 182.

If no drugs checked in item 168, go to item 183.

| | | |
|---|---|---|
| 169. If marijuana checked: OVER THE PAST FOUR WEEKS, HOW MANY TIMES HAVE YOU USED MARIJUANA? | | 1. _____times<br>2. all the time<br>8. no answer or don't know |
| 170. If psychedelics checked: OVER THE PAST FOUR WEEKS, HOW MANY TIMES HAVE YOU USED PSYCHEDELICS? | | 1. _____times<br>2. all the time<br>8. no answer or don't know |
| 171. If cocaine checked: OVER THE PAST FOUR WEEKS, HOW MANY TIMES HAVE YOU USED COCAINE? | | 1. _____times<br>2. all the time<br>8. no answer or don't know |
| 172. If amphetamines checked: OVER THE PAST FOUR WEEKS, HOW MANY TIMES HAVE YOU USED AMPHETAMINES?<br><br>A. WAS IT PRESCRIBED BY A DOCTOR? | | 1. _____times<br>2. all the time<br>8. no answer or don't know<br><br>1. all of it<br>2. some of it<br>3. none of it<br>8. no answer or don't know |

| | | |
|---|---|---|
| 173. If barbiturates checked: OVER THE PAST FOUR WEEKS, HOW MANY TIMES HAVE YOU USED BARBITURATES?<br><br>A. WAS IT PRESCRIBED BY A DOCTOR? | | 1. _____times<br>2. all the time<br>8. no answer or don't know<br><br>1. all of it<br>2. some of it<br>3. none of it<br>8. no answer or don't know |
| 174. If codeine checked: OVER THE PAST FOUR WEEKS, HOW MANY TIMES HAVE YOU USED CODEINE?<br><br>A. WAS IT PRESCRIBED BY A DOCTOR? | | 1. _____times<br>2. all the time<br>8. no answer or don't know<br><br>1. all of it<br>2. some of it<br>3. none of it<br>8. no answer or don't know |
| 175. If methadone checked: OVER THE PAST FOUR WEEKS, HOW MANY TIMES HAVE YOU USED METHADONE?<br><br>A. WAS IT PRESCRIBED BY A DOCTOR? | | 1. _____times<br>2. all the time<br>8. no answer or don't know<br><br>1. all of it<br>2. some of it<br>3. none of it<br>8. no answer or don't know |
| 176. If heroin, opium, or morphine checked: OVER THE PAST FOUR WEEKS, HOW MANY TIMES HAVE YOU USED HEROIN, OPIUM, OR MORPHINE?<br><br>A. WAS IT PRESCRIBED BY A DOCTOR? | | 1. _____times<br>2. all the time<br>8. no answer or don't know<br><br>1. all of it<br>2. some of it<br>3. none of it<br>8. no answer or don't know |

If any drugs checked in item 168, ask items 177 to 182 below.

| | | |
|---|---|---|
| 177. OVER THE PAST FOUR WEEKS, AGAIN, HOW OFTEN HAS YOUR USE OF DRUGS CAUSED ANY PROBLEM WITH YOUR SPOUSE? PLEASE USE CARD | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |

| | | |
|---|---|---|
| 178. HOW OFTEN HAS YOUR USE OF DRUGS CAUSED ANY PROBLEM WITH YOUR CHILDREN OR PARENTS? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |
| 179. HOW OFTEN HAS YOUR USE OF DRUGS CAUSED ANY PROBLEM WITH YOUR FRIENDS? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |
| 180. HOW OFTEN HAS YOUR USE OF DRUGS CAUSED ANY PROBLEM WITH YOUR EMPLOYER OR JOB? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know<br>9. not applicable |
| 181. HOW OFTEN HAS YOUR USE OF DRUGS CAUSED ANY PROBLEM WITH THE WAY YOU FEEL ABOUT YOURSELF? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never<br>8. no answer or don't know |
| 182. OVER THE PAST FOUR WEEKS, HOW OFTEN HAS YOUR USE OF DRUGS CAUSED ANY PROBLEM WITH YOUR PHYSICAL HEALTH? | | 1. all the time<br>2. very often<br>3. often<br>4. sometimes<br>5. seldom<br>6. never |

I'D ALSO LIKE TO ASK YOU ABOUT TROUBLE YOU MAY HAVE BEEN IN WITH THE POLICE IN THE LAST FOUR WEEKS.

| | |
|---|---|
| 183. HAVE YOU BEEN ARRESTED FOR ANYTHING IN THE LAST FOUR WEEKS--THINGS LIKE INTOXICATION OR DRUNKENNESS, ILLEGAL POSSESSION OF DRUGS, AUTOMOBILE MOVING TRAFFIC VIOLATIONS, LOITERING, VAGRANCY, FAMILY PROBLEMS, OR ANYTHING ELSE? | 1. yes<br>2. no<br>8. no answer or don't know |

If yes to item 183, list below all arrests by date and type of charge.

If no to item 183: a) For follow-up interview, go to item 184.
b) For intake interview, go to item 190.

| DATE | CHARGE |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

FINALLY, WE'D LIKE TO LEARN HOW YOU FEEL ABOUT THE SERVICES YOU'VE RECEIVED AT THE ADAMS COUNTY MENTAL HEALTH CENTER OVER THE PAST _____ MONTHS.

| | | |
|---|---|---|
| 184. HAVE YOU GOTTEN THE KIND OF SERVICES YOU WANTED? WOULD YOU SAY- (Read Categories 1 - 4) | | 1. definitely yes<br>2. somewhat<br>3. I don't know<br>4. not at all<br>8. no answer or don't know |
| 185. THINK BACK ON THE PROBLEMS YOU HAD WHEN YOU CAME TO THE CENTER ABOUT _____MONTHS AGO. HOW MUCH HELP HAVE YOU RECEIVED FOR THESE PROBLEMS: WOULD YOU SAY- (Read Categories 1 - 5) | | 1. a great deal of help<br>2. quite a bit of help<br>3. some help<br>4. a little help<br>5. no help at all<br>8. no answer or don't know |
| 186. THINK BACK AGAIN ON THE PROBLEMS YOU HAD WHEN YOU CAME TO THE CENTER AND THEN THINK ABOUT YOURSELF TODAY. COMPARED TO WHEN YOU CAME TO THE CENTER, DO YOU FEEL DIFFERENTLY ABOUT YOUR PROBLEMS TODAY? WOULD YOU SAY- (Read categories 1 - 5) | | 1. a great deal better<br>2. quite a bit better<br>3. somewhat better<br>4. about the same as when I first came in<br>5. worse<br>8. no answer or don't know |

If "better" or "worse", ask item 187 below.

If "about the same", go to item 188.

| | | |
|---|---|---|
| 187. IS YOUR FEELING BETTER/WORSE TODAY DUE TO THE SERVICES YOU'VE RECEIVED AT THE CENTER? WOULD YOU SAY - (Read Categories 1 - 4) | | 1. yes, all of it<br>2. yes, most of it<br>3. yes, part of it<br>4. no, none of it<br>8. no answer or don't know |
| 188. IF YOU WERE TO SEEK HELP AGAIN, WOULD YOU COME BACK TO THE CENTER? WOULD YOU SAY - (Read Categories 1 - 4) | | 1. definitely yes<br>2. it depends<br>3. I don't know<br>4. definitely not<br>8. no answer |

consumer satisfaction; closing-49

| | |
|---|---|
| 189. ALL IN ALL, HOW SATISFIED ARE YOU WITH THE SERVICES YOU'VE RECEIVED AT THE ADAMS COUNTY MENTAL HEALTH CENTER OVER THE PAST _____ MONTHS? WOULD YOU SAY - (Read Categories 1 - 6) | 1. very satisfied<br>2. moderately satisfied<br>3. mildly satisfied<br>4. indifferent<br>5. mildly dissatisfied<br>6. moderately dissatisfied<br>7. very dissastisfied<br>8. no answer or don't know |

190. THAT'S ALL THE QUESTIONS I HAVE TODAY. THANK YOU SO MUCH FOR YOUR HELP AND CO-OPERATION. NOW, DO YOU HAVE ANY QUESTIONS FOR ME BEFORE WE END? OK. THANK YOU VERY MUCH.

## INTERVIEWER'S OBSERVATIONS: PART A

To be completed immediately following the interview.

Card 5

1. Length of the interview: _____ — — — 49-51

2. Place of the Interview: 50
   1. _____ Client's home
   2. _____ Office
   3. _____ Other _____

3. Persons present: 51
   (do not include client)
   _____
   _____
   _____
   _____

4. Client's attitude toward the interview: 52
   1. _____ Highly cooperative
   2. _____ Cooperative
   3. _____ Indifferent
   4. _____ Uncooperative

5. Quality of client interaction: 53
   1. _____ Very responsive
   2. _____ Responsive
   3. _____ Indifferent
   4. _____ Unresponsive
   5. _____ Very unresponsive

6. Confidence in validity of interview:

   How confident do you feel that this interview is an accurate, valid indication of the client's actual life situation--that is, how confident are you that client was being open and was intellectually capable of reporting his actual life situation? 54
   1. _____ Very confident
   2. _____ Moderately confident
   3. _____ Not at all confident

## INTERVIEWER'S OBSERVATIONS: PART B(1)

Check all the items below that apply to respondent's appearance or behavior during the interview.

| | | Card 5 |
|---|---|---|
| _____1. Face is dirty or unshaven or makeup is smeared despite availability of washing and shaving facilities. | — | 56 |
| _____2. Hair is unkempt, tangled or matted. | — | 57 |
| _____3. Clothes are dirty or in disarray. | — | 58 |
| _____4. Clothes or jewelry or other accessories are bizarre or grossly inappropriate. | — | 59 |
| _____5. From time to time becomes preoccupied or shows lapse of attention. | — | 60 |
| _____6. Pays no attention to interviewer a good deal of the time. | — | 61 |
| _____7. Speech is full of long pauses. | — | 62 |
| _____8. Makes up new words (neologisms). | — | 63 |
| _____9. Abruptly stops talking in midsentence from time to time (blocking). | — | 64 |
| ____10. Repeats own words or phrases over and over in a mechanical manner (e.g. "for the living--for the living") perseveration). | — | 65 |
| ____11. Speech is at least some of the time disorganized and incoherent. | — | 66 |
| ____12. Speech is at least a good deal of the time disorganized and incoherent. | — | 67 |
| ____13. Speech is for the most part, disorganized and incoherent. | — | 68 |
| ____14. Speaks in a faint voice or voice becomes weak and fades away. | — | 69 |
| ____15. Pitch of voice shows no variation (i.e. completely monotonous). | — | 70 |
| ____16. Abruptly and rapidly keeps changing the topic of conversation so that ideas are not completed (flight of ideas). | — | 71 |
| ____17. Says things in juxtaposition which have little or no logical or inherent relationship to each other (e.g. "I'm tired. All people have eyes.") (loose associations). | — | |

INTERVIEWER'S OBSERVATIONS: PART B(2)

| | | |
|---|---|---|
| | | Card 5 |
| ____18. Combines unrelated words or phrases because they share similar sounds (e.g. "I'm sad, mad, bad") (clang association). | — | 72 |
| ____19. Keeps deliberately evading answering questions by becoming inaudible or unitelligible or by changing topic or claiming ignorance. | — | 73 |
| ____20. Talks in an ambiguous, obscure, vague, or cryptic manner. | — | 74 |
| | | Card 6 |
| ____21. Talks in a digressive or aimless fashion (rambling). | — | 11 |
| ____22. Content of answer at times has little if anything to do with the question asked (irrelevance) (do not include wandering or rambling from the topic or incoherence). | — | 12 |
| ____23. Keeps adding excessive or useless details to his answers (circumstantial). | — | 13 |
| ____24. Talks or mutters to himself. | — | 14 |
| ____25. Shouts, yells, or screams. | — | 15 |
| ____26. Keeps cursing or keeps using obscene language. | — | 16 |
| ____27. Makes no verbal response to most or all questions. | — | 17 |
| ____28. Answers questions with single words or brief phrases only. | — | 18 |
| ____29. Talks on and on and keeps resisting interruption. | — | 19 |
| ____30. Says only a few words or does not talk at all. | — | 20 |
| ____31. Speaks extremely rapidly and with infrequent pauses. | — | 21 |
| ____32. Speaks extremely slowly. | — | 22 |
| ____33. Has a sad expression or holds his body in a dejected or despondent posture. | — | 23 |
| ____34. Talks of his condition with practically no outward sign of emotion. | — | 24 |
| ____35. Laughs or grins inappropriately during discussion of a serious topic (do not include simple embarrassment). | — | 25 |
| ____36. Cries or is tearful. | — | 26 |

## INTERVIEWER'S OBSERVATIONS: PART B(3)

observe - 57

| | | Card 6 |
|---|---|---|
| ____37. Maintains a facial expression lacking signs of emotion. | ___ | 27 |
| ____38. Shows fleeting and rapidly alternating facial expressions. | ___ | 28 |
| ____39. Keeps laughing or giggling in a foolish way. | ___ | 29 |
| ____40. Often acts inappropriately gay and cheerful. | ___ | 30 |
| ____41. Has a frightened or apprehensive expression. | ___ | 31 |
| ____42. Keeps expressing hatred or contempt. | ___ | 32 |
| ____43. Keeps looking angry. | ___ | 33 |
| ____44. Keeps virtually the same posture throughout the interview. | ___ | 34 |
| ____45. Is slow in all movements. | ___ | 35 |
| ____46. Keeps scratching, licking or picking at skin, etc. | ___ | 36 |
| ____47. Bangs fist on table or stamps feet. | ___ | 37 |
| ____48. Deliberately tears, throws, or breaks something. | ___ | 38 |
| ____49. Keeps eyes closed or averted. | ___ | 39 |
| ____50. Keeps drumming on table with fingers or taps on floor with foot, etc. | ___ | 40 |
| ____51. Gets up and moves about restlessly. | ___ | 41 |
| ____52. Undresses or exposes genitals, or makes an overt sexual suggestion or advance. | ___ | 42 |
| ____53. Keeps fidgeting or squirming in his seat. | ___ | 43 |
| ____54. Assumes strange poses for no apparent reason, or writhes or contorts his body. | ___ | 44 |
| ____55. Tries to start an argument. | ___ | 45 |
| ____56. Asks or tries to leave room before termination of interview. | ___ | 46 |
| ____57. Makes menacing gesture or physical attack. | ___ | 47 |
| ____58. Refuses to give further details in a problem area under discussion. | ___ | 48 |
| ____59. Expresses objection to interview or resentment at having to answer questions. | ___ | 49 |

INTERVIEWER'S OBSERVATIONS: PART B(4)

| | | Card 6 |
|---|---|---|
| ___60. Accuses interviewer of evil or malicious intent. | — | 50 |
| ___61. Is sarcastic, contemptuous or insulting towards interviewer. | — | 51 |
| ___62. Resists or refuses to do what is asked of him (e.g. to sit down). | — | 52 |
| ___63. Keeps expressing regret for something he has done or failed to do. | — | 53 |
| ___64. Indicates that because of his behavior, his family, associates or authorities are concerned that he might physically injure himself. | — | 54 |
| ___65. Claims that he is unable to perform at job, school, or housework or get anything done. | — | 55 |
| ___66. Speaks of contact, power, knowledge or sensational plan which, though not impossible, is extremely unlikely (non-delusional grandiosity). | — | 56 |
| ___67. Keeps boasting of his accomplishments, skills, influence or contacts. | — | 57 |
| ___68. Keeps complaining about his physical condition or bodily symptoms. | — | 58 |
| ___69. Manner of response or failure to respond makes it uncertain whether or not many items are true or false (e.g. subject incoherent, evasive, suggestible). | — | 59 |

## INTERVIEWER'S OBSERVATIONS: PART C

Below are words which describe different kinds of moods and feelings. Mark an "X" in the space beside the words which describe how you think the subject was feeling during the interview. Check all the words that describe the subject's feelings. Work rapidly.

| | |
|---|---|
| | 1. afraid |
| | 2. agreeable |
| | 3. alive |
| | 4. angry |
| | 5. awful |
| | 6. bitter |
| | 7. blue |
| | 8. calm |
| | 9. cheerful |
| | 10. contented |
| | 11. cooperative- |
| | 12. cruel |
| | 13. desperate |
| | 14. discouraged |
| | 15. disgusted |
| | 16. fine |
| | 17. friendly |
| | 18. furious |
| | 18. good |
| | 20. good-natured |
| | 21. happy |

| | |
|---|---|
| | 22. healthy |
| | 23. hopeless |
| | 24. irritated |
| | 25. kindly |
| | 26. lonely |
| | 27. lost |
| | 28. low |
| | 29. mad |
| | 30. nervous |
| | 31. peaceful |
| | 32. pleasant |
| | 33. polite |
| | 34. safe |
| | 35. secure |
| | 36. steady |
| | 37. strong |
| | 38. tense |
| | 39. terrified |
| | 40. understanding |
| | 41. upset |
| | 42. worried |

RESPONSE CARD

DURING THE PAST FOUR WEEKS, HOW OFTEN:

1. all the time
2. very often
3. often
4. sometimes
5. seldom
6. never

# APPENDIX 4: Derivation of Subscales From the C*O*C*E Adult Interview

**Part 1. Description of Subscales Generated by the C*O*C*E Adult Interview**

| SUBSCALE NAME | SUBSCALE DESCRIPTION | CONTINGENCIES UNDER WHICH A SUBSCALE SCORE IS DERIVED | ITEM NUMBERS USED TO DERIVE SCORE* ITEM #s |
|---|---|---|---|
| 501. Job Hours | Over past 4 weeks, average hours per week worked on job. These hours are adjusted for legitimate time off, e.g., vacation or physical illness. | This Subscale Score is derived for all interviewees. | 3-5 |
| 502. School Hours | Over past 4 weeks, average hours per week spent in school classes or studying, adjusted for legitimate time off, e.g., vacation or physical illness. | This Subscale Score is derived for all interviewees. | 21-23 |
| 503. Housework Hours | Over past 4 weeks, average hours per week spent in household tasks, adjusted for legitimate time off, e.g., vacation or physical illness. | This Subscale Score is derived for all interviewees. | 33-35 |
| 504. Volunteer Hours | Over past 4 weeks, average hours per week spent in volunteer services, adjusted for legitimate time off, e.g., vacation or physical illness. | This Subscale Score is derived for all interviewees. | 52-54 |
| 505. In-Household Childcare Hours | Over past 4 weeks, average hours per week spent in childcare activities with children living in household, adjusted for legitimate time off, e.g., vacation or physical illness. | This Subscale Score is derived for all interviewees. | 65-57 |
| 506. Out-Household Childcare Hours | Over past 4 weeks, average hours per week spent in childcare activities for child not living in household, adjusted for legitimate time off, e.g., vacation or physical illness. | This Subscale is derived for all interviewees. | 76-78 |
| 507. Job Functioning (from Fishman & Gordon 1973) | Over past 4 weeks, level of functioning on the job vis-a-vis extent of problems at work, complaints or praise from boss, etc. | This Subscale Score is derived for all interviewees who have worked an average of 4 hours per week or more over the last 4 weeks. | 5-14 |
| 508. School Functioning (from Fishman & Gordon 1973) | Over past 4 weeks, level of functioning in school vis-a-vis extent of trouble doing the work assigned, complaints or praise from teachers, etc. | This Subscale Score is derived for all interviewees who have spent an average of 4 hours per week or more in classes and studying over the last 4 weeks. | 25-32 |
| 509. Housekeeping Functioning (from Fishman & Gordon 1973) | Over past 4 weeks, level of functioning in household tasks vis-a-vis extent of trouble doing tasks, complaints or praise from other household members, etc. | This Subscale Score is derived for all interviewees who have spent an average of 4 hours per week or more doing household tasks over the past 4 weeks. | 35-50 |
| 510. Volunteer Services Functioning | Over past 4 weeks, level of functioning in volunteer services vis-a-vis extent of trouble doing the work, complaints or praise from other people about the work, etc. | This Subscale Score is derived for all interviewees who have spent an average of 4 hours per week or more doing volunteer services over the past 4 weeks. | 54-65 |
| 511. In-Household Childcare Functioning (from Fishman & Gordon 1973) | Over past 4 weeks level of functioning in childcare activities for children living in household vis-a-vis problems taking care of children, extent of getting angry at the children, etc. | This Subscale Score is derived for all interviewees who have had children under 19 years of age living in household at some point over past 4 weeks. | 67-74 |

**Part 1. Description of Subscales Generated by the C*O*C*E Adult Interview—Continued**

| SUBSCALE NAME | SUBSCALE DESCRIPTION | CONTINGENCIES UNDER WHICH A SUBSCALE SCORE IS DERIVED | ITEM NUMBERS USED TO DERIVE SCORE* ITEM #s |
|---|---|---|---|
| 512. Out-Household Childcare Functioning (from Fishman & Gordon 1973) | Over past 4 weeks, level of functioning in childcare activities for children not living in household. Same types of items as subscale 511. | This Subscale is derived for all interviewees who have spent an average of 14 hours per week or more in such activities over the past 4 weeks. | 78-85 |
| 513. Relationship with spouse/dating companion (from Fishman and Gordon 1973) | Over past 4 weeks, nature of relationship with spouse or steady dating companion. | This Subscale is derived for all interviewees who are married or who have had a steady dating companion over last 4 weeks. | 87-94 |
| 514. Relationship with parents (from Fishman & Gordon 1973) | Over past 4 weeks, nature of relationship with father and/or mother. | This Subscale is derived for all interviewees who have at least "often" spent time with their father and/or mother over the past 4 weeks. | 97-108 |
| 515. Number of friends (from Ciarlo and Reihman's "Scale 3" 1974) | Number of close and other friends reported by interviewee. | This Subscale Score is derived for all interviewees. | 109-110<br>112-113 |
| 516. Relationship with friends (from Fishman and Gordon 1973 | Over past 4 weeks, nature of relationship with friends. Note that no contact at all with friends is considered maximum impairment in relationship. | This Subscale is derived for all interviewees. | 111, 114<br>116-118 |
| 517. Relationship with Other Relatives (from Fishman and Gordon 1973) | Over past 4 weeks, nature of relationship with other relatives not included in Scales 513-516 above. | This Subscale Score is derived if interviewee has socialized "at the time" or "very often" with other relatives over the last 4 weeks. | 120 |
| 518. Psychological Distress (from Ciarlo and Reihman's "Scale 1," 1974) | Over past 4 weeks, extent of "subjective sense of distress or discomfort experienced as a negative state, and frequently couched in somatic complaints" (Ciarlo & Reihman 1974). | This Subscale Score is derived for all interviewees. | 125-133 |
| 519. Anxiety Symptoms (from Warheit et al. 1973) | Over past 4 weeks, extent to which interviewee has experienced psychophysiological symptoms of anxiety. | This Subscale Score is derived for all interviewees. | 134-142 |
| 520. Anxiety Functioning (from Warheit et al. 1973) | Over past 4 weeks, extent to which worry, nervousness, and/or a feeling of impending nervous breakdown has interfered with work, family, and social life. | This Subscale Score is derived for all interviewees. | 144-152 |
| 521. Mood (from Warheit et al. 1973) | Over past 4 weeks, extent to which the interviewee has felt subjective symptoms of depression, e.g., feelings of aloneness, hopelessness, and helplessness. | This Subscale Score is derived for all interviewees. | 153-160 |
| 522. Manifested Distress (from Zuckerman and Lubin 1965) | Extent of interviewee's present feelings of anxiety, depression, and hostility as judged from his verbal and nonverbal behavior during the interview. | This Subscale Score is derived for all interviewees. | 1-42 |
| 523. Reported Psychoticism (from Wiggins 1966) | Over past 4 weeks, extent of interviewee's experience of delusional, hallucinatory, or otherwise psychotic thoughts, as reported by interviewee. | This Subscale Score is derived for all interviewees. | 161-173 |
| 524. Manifested Psychoticism (from Spitzer et al. "Symptom Scales" 5-8, 10, 13; 1980) | Extent of interviewee's present psychotic thoughts and behaviors as judged from his verbal and nonverbal behavior during the interview. | This Subscale Score is derived for all interviewees. | 1-69 |
| 525. Alcohol Moderation (from Ciarlo and Reihman "Scale 8," 1974) | Over past 4 weeks, frequency of alcohol intoxication. | This Subscale Score is derived for all interviewees. | 175 |

**Part 1. Description of Subscales Generated by the C*O*C*E Adult Interview—Continued**

| SUBSCALE NAME | SUBSCALE DESCRIPTION | CONTINGENCIES UNDER WHICH A SUBSCALE SCORE IS DERIVED | ITEM NUMBERS USED TO DERIVE SCORE* ITEM #s |
|---|---|---|---|
| 526. Freedom from Alcohol Impairment of Functioning (from Ciarlo & Reihman 1974) | Over past 4 weeks, extent of life problems caused by interviewee's use of alcohol. | This Subscale Score is derived for all interviewees. | 176-181 |
| 527. "Soft" Drug Moderation (from Ciarlo & Reihman "Scale 11", 1974) | Over past 4 weeks, frequency of using nonprescribed marijuana, psychedelics, cocaine, amphetamines, barbiturates, and codeine. | This Subscale Score is derived for all interviewees. | 182-188 |
| 528. "Hard" Drug Moderation (from Ciarlo & Reihman "Scale 10," 1974) | Over past 4 weeks, frequency of using nonprescribed methedone, heroin, opium, and morphine. | This Subscale Score is derived for all interviewees. | 189-190 |
| 529. Freedom from Drug Impairment of Functioning (from Ciarlo & Reihman "Scale 9," 1974) | Over past 4 weeks, extent of life problems caused by use of prescribed and nonprescribed "soft" and "hard" drugs, listed in Subscales 527 and 528. | This Subscale Score is derived for all interviewees. | 191-196 |
| 530. Lawabiding Behavior (from Ciarlo & Reihman "Scale 6," 1974) | Over past 4 weeks, number of interviewee's police arrests | This Subscale Score is derived for all interviewees. | 197-198 |
| 531. Independence from Welfare (from Ciarlo & Reihman "Scale 7," 1974) | Over past 4 weeks, average weekly dollar amount received from welfare. | This Subscale Score is derived for all interviewees. | 17 |
| 532. Independence from Mental Health Services (from Ciarlo & Reihman "Scale 7," 1974) | Over past 4 weeks, type and amount of mental health services received by interviewee. In deriving this score, outpatient services are weighted 1; partial care, 2; and inpatient services, 4. | This Subscale Score is derived for all interviewees. | 200-201 |
| 533. Consumer Satisfaction (from Ciarlo & Reihman "Scale 12," 1974) | Extent to which the interviewee has been satisfied with the mental health services he has received from the CMHC. | This Subscale is derived for all interviews which take place after the interviewee has received some services from the CMHC. | 202-206 208 |

*Item numbers are from the C*O*C*E Adult Interview Schedule, see Appendix 3.

**Part 2. Derivation of Final Scales from Interview Subscales.**

| SCALE NUMBER AND NAME | SCALE DESCRIPTION | FORMULA FOR DERIVING SCALE FROM T-SCORED SUBSCALES |
|---|---|---|
| 1. Productive Hours | This Scale reflects the total number of hours per week the client has been spending in productive activities, adjusted for legitimate time off, e.g., because of vacation of physical illness. | This Scale is computed by summing across Subscales 501-506. |
| 2. Productive Adequacy | This Scale reflects the overall adequacy of the interviewee's functioning across all of those productive activities in which he is engaged. | This Scale is computed as the weighted mean of Subscales 507-512 for which the interviewee actually has a score.<br>. . . In deriving the mean, each Subscale is weighted by the proportion of hours the interviewee spends in the particular productive activity; e.g., if an interviewee spends 75 percent of his productive hours on the job and 25 percent in housekeeping activities, then in deriving a mean Productive Adequacy Scale score, Subscale 507 ("Job Functioning") is weighted three times as much as Subscale 509 ("Housekeeping Functioning").<br>. . . If the interviewee is not involved in any productive activities and thus all of the Subscales 507-512 are blank, an automatic score of "30" is assigned for Productive Adequacy. Since the other Productive Adequacy scores are later T-scored in terms of clients at admission, the score of 30 assigned to interviewees with no productive activities places them two standard deviations below the mean on Productive Adequacy. This is similar to the procedure employed for this type of situation by Spitzer et al. (1970). |
| 3. Social Adequacy | This Scale reflects the overall adequacy of the interviewee's social relations, with the areas of Spouse/Companion, Parents, Friends, and Other Relatives each given an equal weight. | This Scale is computed as the mean of the following weighted Subscales: Subscale 513, Subscale 514, one-half Subscale 515, one-half Subscale 516, and Subscale 517. |
| 4. Emotional Comfort | This Scale reflects the interviewee's overall emotional comfort, with interviewee-reported distress (reflected by Subscales 518-521) given the same weight as interviewer-observed distress (reflected by Subscale 522). | This Scale is computed as the mean of the following Subscales, which are scored for all interviewees: Subscale 518, Subscale 519, Subscale 520, Subscale 521, four times Subscale 522. |
| 5 - 14 | Same as Subscales 524-533, respectively. | These Scales are identical to Subscales 524-533, respectively. |

## APPENDIX 5: Technical Procedures for Creating Figures 4 and 5

These figures present estimated average outcomes for Adams Center adolescent and adult clients as a whole. These outcomes are shown in terms of community percentile scores. *Since there were no actual interview data with nonclients, it must be emphasized that these community percentile scores could only be very roughly estimated and are presented for illustrative purposes only.* The specific procedure for deriving these scores was as follows:

- The mean scores on Scales 1-14 for clients at admission, 3-months followup, and 20-months followup were first transfered into T-scores based upon the admission scores. The results of these analyses are presented in table 18.
- The T-scores for scales 1-13 in table 18 were then transformed into estimated T-scores based upon community norms. Since no actual interviews were administered to nonclients, this estimation was done on the basis of two general criteria:
  - For scales which were derived from the scales of Ciarlo and Reihman (1974), the data these authors present on community and client means were employed.
  - For other scales, an a priori approach was used based upon the author's knowledge of the Adams County community and the Adams Center's client population.
- The weights in table 5 were applied to the community-based T-scores for Scales 1-13 to derive weighted means for Team Leader, Client-Oriented, and Economy-Oriented Summary Functioning. These weighted means were thus also in terms of community-based T-scores.
- The community-based T-scores for Scales 1-13 and the Summary-Functioning Scales were then transformed into community percentile scores using a normal curve distribution—e.g., a score of 50 is at the 50th percentile, a score of 40 is at the 16th percentile, etc. (Some methodologists argue that percentile scores should only be derived from T-scores if the original raw scale scores are normally distributed, which was not true for all the scales in figure 4. Other methodologists disagree with this constraint [e.g., Ciarlo and Reihman 1974]. In any case, it should be noted that an alternative method for computing percentile scores is to create a rank-ordered frequency distribution of the raw scores and then to compute percentiles from cumulative frequencies.)

## APPENDIX 6: Technical Procedures for Creating Figure 6

This figure presents estimated average outcomes for the Adams Center child clients as a whole for Individual-functioning Scales 1-4 and Summary-functioning Scales 5-7. Like figures 4 and 5, these outcomes are in terms of community percentile scores. These scores were derived in the following way:

- The Louisville Behavior Checklist generated community-based T-scores for Scales 1-3, which are presented in table 15.
- Community-based T-scores were derived for Scale 4 using an a priori approach based upon the author's knowledge of the Adams County community and the Adams Center's client population.
- The weights in table 6 were applied to the community-based T-scores for Scales 1-4 to derive weighted means for Team Leader, Client-Oriented, and Economy-Oriented Summary Functioning, i.e., for Scales 5-7. These weighted means were thus, also in terms of community-based T-scores.
- The community-based T-scores for Scales 1-7 were then transformed into community percentile scores using a normal curve distribution. (As a qualification to this type of transformation, see the note at the end of appendix 5.)

## APPENDIX 7: Technical Procedures for Creating Table 7

Table 7 presents 3-month cost-outcome baserates for various target groups of adolescent and adult clients at the Adams Center. The exhibit is divided into items A-Q. Each item presents the relative cost and outcome of services as a function or a particular non-interview demographic or clinical clients variable at admission. The original analyses for the exhibit employed four different summary-change scores, including Team Leader, Client-Oriented, Economy-Oriented, and Severity-Oriented Summary Change. However, these four scores were later found to be highly intercorrelated, with the six intercorrelations ranging between .81 and .96, with a mean of .92. Thus, only the results for the Team Leader Summary-Change Scale, which reflects values which fall in the middle of those of the other summary-change scales, were selected for table 7.

Each item of table 7 summarizes a pair of one-way analyses of variance. The independent variable in both analyses is the item's client characteristic. The dependent variable in one of the analyses is the cost of services per client; and the dependent variable in the other analysis is the outcome of services, as reflected by Team Leader Summary Change. Each one-way analysis of variance compared the individual means via Duncan Multiple Range tests, employing a one-tailed significance level of $p \leq .05$. Based on these tests, the various means were labeled as follows:

- If the means which were the highest and lowest absolute scores were not significantly different on the Multiple Range Test, all means in the row were labeled MEDIUM.
- If the means which had the highest and lowest absolute scores were significantly different, the lowest mean was labeled LOW; the highest mean was labeled HIGH; and each mean "X" in the middle was categorized as follows:
  - If X was significantly different from both the HIGH and LOW means, X was categorized as MEDIUM.
  - If X was not significantly different from both the HIGH and LOW means, X was also categorized as MEDIUM.

# APPENDIX 8: Technical Procedures for Creating Tables 8, 9, 10

These tables present cost-effectiveness comparisons at the Adams Center for the Storefront, Monitoring, and Random Assignment studies. Like table 7, these tables are based on one-way analyses of variance. However, unlike the analyses in table 7, these analyses involve an independent variable that represents a treatment dimension rather than a client characteristic. Thus, the results of statistical analysis give evidence about the relative cost and outcome of different types of treatment, i.e., about the cost effectiveness of the different treatments.

In tables 8, 9, 10, the comparisons between A and B were done on the basis of *t*-test analysis. Only if the *t*-test was significant at the two-tailed .10 level or better were the costs or outcomes considered different from each other. (The .10 level was chosen because of the exploratory nature of the studies.)

Table 9 which presents results from the Monitoring Study, uses the same outcome measure as table 7, i.e., Team Leader Summary Change. Table 8, which presents results from the Random Assignment Study, uses a different outcome measure—namely, Team Leader Summary Functioning at followup. This measure was employed because this study was initiated before the development of the C*O*C*E Adult Interview, and thus this interview was not administered to the clients at admission. However, clients were randomly assigned to the different treatment conditions in the study, and an analysis with the Adams County Interview showed no differences in the overall functioning at admission of the clients assigned to the different treatment groups. Hence, there is justification for assuming that there were no functioning differences among the treatment groups at admission and any differences between the treatment groups in their functioning at followup can be ascribed to the differential effects of the treatments themselves.

It should be noted that only one measure of Summary Functioning was chosen for the Random Assignment Study, because previous analysis had shown a high intercorrelation among the Team Leader, Client-Oriented, and Economy-Oriented Summary-Functioning Scores. The three particular intercorrelations were .79, .87, and .96.

Table 8 presents results from the Storefront study. Since this study was not a formal part of the present contract and since it was completed before the D*A*R*E methodology was fully developed, it employed less rigorous measures of cost and outcome than the other two studies. However, the study is included in the present report as another illustration of cost-effectiveness data. The actual analytic procedures used in this study were as follows:

- Cost per client was estimated from analyzing the number of contacts contained in each client's record.
- Outcome per client was determined from data in the Adams County Interview (Fishman and Gordon 1973), which was administered at 3-month followup. Since a comparison of the Storefront and Main Office clients showed no differences on the types of intake demographic and clinical variables listed in table 7, it was assumed that the two groups were matched at admission and that any systematic differences between them at followup would be attributable to the effect of the treatment variable. The specific measure of outcome was a summary scale composed of two equally weighted individual scales. These were consumer satisfaction, which had similar items as Consumer Satisfaction Scale 14 on the C*O*C*E Adult Interview, and affective comfort, which was measured by a reversed combination of the "anxiety," "depression," and "hostility" scales on Zuckerman and Lubin's (1965) Multiple Affect Adjective Check List.

# Technical Notes

## CHAPTER I

1. A technical rationale for this approach and a description of the assessment techniques used in implementing it are presented in chapter VI.
2. For an explanation of how the dimensions in tables 2 and 3 were selected, and for relevant references to the professional literature, see chapter VI.
3. The procedure developed to accomplish this for the present methodology is called Decisionmaker Value or DMV analysis and is described in chapter VI, p. 58.

## CHAPTER II

1. For additional details on the distinction between cost outcome and cost effectiveness, see appendix 1, p. 74.

## CHAPTER III

1. The 14th scale listed in table 2, Consumer Satisfaction, is deleted from figure 4 because: (a) this scale reflects satisfaction with services that a client has received and it is not applicable to the general catchment area population; and (b) it is not meaningful to ask clients at admission about their satisfaction with services not yet received.
2. The DMV procedure by which this was accomplished is described in chapter VI, p. 58.
3. See Fishman (1975*a*, Vol. 1, pp. XVI-17) for the derivation of contact frequency.
4. For all three scales, improvement over admission was statistically significant, as described in chapter VI, p. 60.
5. Using the same format as figures 4 and 5, figure 6 presents the average outcome of services delivered at the Adams Center to child clients between admission and 3-month followup. (No outcome data were available beyond 3-month followup.) Scales 1-4 in this figure are the first four scales listed in table 2. (Scale 5, Consumer Satisfaction, is deleted for the same reasons it was deleted from figure 4. Scales 5-7 in figure 6 are summary scales, each of which involves a particular integration of the individual scales 1-4 into a single summary scale. Each integration is based upon a different set of decisionmaker values. The weighting of the four individual scales used to derive each summary scale is presented in table 6. As can be seen from the names of the summary scales and from the weights in the table, these three child scales parallel the three adolescent and adult summary scales.
6. The specific procedure employed for doing this is described in chapter VI, p. 59-60.
7. The integration of different scores into a single measure is step 5 in table 1.
8. Cf. chapter III, p. 21 and figures 4 through 6 and tables 5 and 6.
9. The summary-change scores incorporate the Consumer Satisfaction scale, so that Consumer Satisfaction is given the most weight in the Client-Oriented Summary Change Score and least weight in the Economy-Oriented Summary Change Score. The specific procedures for incorporating Consumer Satisfaction into the summary-change scores are described in chapter VI, p. 58.
10. The specific statistical procedures for these categorizations are described in appendix 7.
11. The outcome figure is derived from the "Team-Leader" Summary Change Score. Since, as described in the last section, this score was highly correlated with the other three summary-change scores studied, the outcome results indicated by this score are very similar to those indicated by the other scores.
12. The Monitoring and Random-Assignment Studies were conducted as a formal part of the NIMH contract and include data that were generated by the D*A*R*E cost-effectiveness methodology described in parts 2 and 3 of this report. The Storefront study was conducted before the contract and before the D*A*R*E methodology was fully developed, and thus the data from this study were not as rigorously derived. However, the study is included in this report to illustrate the types of questions such studies can address.
13. For a discussion of the impact upon cost effective-

ness of different followup periods, cf. appendix 1, p. 75.

14. For a further discussion of this issue, see appendix 1, p. 75.
15. Psychiatrists generally are not assigned as primary therapists; rather, they are usually involved in other functions, including drug therapy, supervision, and coordination of hospital services.
16. Note that this decision should be qualified by the finding in the Random Assignment Study, discussed below, that therapists with higher training, experience, and pay were *not* found to be more cost effective at 20-month followup.
17. Note that this finding of no difference is discrepant from the finding in the Monitoring Study that, at 3-month followup, therapists with higher training, experience, and pay were most cost effective. While such an inconsistency in results could be due to a variety of factors, one likely possibility is that the cost effectiveness achieved by the "high" therapists is superior over a limited period of time, but, at the end of 20 months, this superiority becomes cancelled out by other factors. *In any case, the reader is again reminded that, generally, the results of a cost-effectiveness analysis may be sensitive to the time period between the start of service and followup assessment* (cf. appendix 1, p. 75).

## CHAPTER IV

1. A detailed description of the flowchart can be found in chapter V of the Final Contract Report (Fishman 1975*a*). Technical Documentation of the computer software for implementing the flowchart can be found in chapters VII-XV of this same report.

## CHAPTER VII

1. Cf. chapter VI, p. 53.
2. Cf. chapter II, p. 17.
3. Cf. the discussion at the beginning of chapter II and in appendix 1.
4. Cf. table 8.
5. Cf. table 9.
6. Cf. table 10.
7. Cf. table 10, comparison 6.
8. Cf. appendix 2 and figure 8.
9. If the outline in figure 10 were being employed to operate a particular type of human service, e.g., childcare centers, the third and fourth steps would be redefined as follows: Step 3, "identification of relevant childcare services by nonchildcare agencies (e.g., parent education by CMHCs)"; and Step 4, "identification of needed services by childcare agencies." If the outline in figure 10 were being employed to operate an integrated human service delivery system, steps 3 and 4 would be merged and redefined as "identification of needed services by integrated human service agencies."

## References


American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. Second Edition (DSM-II). Washington, D.C.: American Psychiatric Assoc., 1968.

Attkisson, C.C., and Broskowski, A. Evaluation and the emerging human service concept. In: Attkisson, C.C., et al. eds. *Evaluation of Human Service Programs*. New York: Academic Press, 1978.

Attkisson, C.C., Hargreaves, W.A., Horowitz, M.J.; and Sorensen, J.E. eds. *Evaluation of Human Services Programs*. New York: Academic Press, 1978.

Bergin, A.E. The evaluation of therapeutic outcomes. In: Bergin, A.E., and Garfield, S.L., eds. *Handbook of Psychotherapy and Behavior Change*. New York: John Wiley, 1971.

Campbell, D.T. Reforms as experiments. *American Psychologist* 24: 419-429, 1969.

Ciarlo, J.A. Personal communication, 1973.

Ciarlo, J.A.; Lin, S.; Bigelow, D.; and Biggerstaff, M. "A Multi-Dimensional Outcome Measure for Evaluating Community Mental Health Programs." Paper presented at the Annual Convention of the American Psychological Association, 1972.

Ciarlo, J.A., and Reihman, J. "The Denver Community Mental Health Questionnaire: Development of a Multidimensional Program Evaluation Instrument." Paper presented at the Annual Convention of the American Psychological Association, 1974.

Consumer Reports. Single-lens reflex cameras. *Consumer Reports*. 39, November 1974.

Consumer Reports. Floor polishes. *Consumer Reports* 40, February 1975.

Dohrenwend, B.P. Personal communication, 1973.

Dohrenwend, B.P. Social status, stress, and psychological symptoms. *American Journal of Public Health* 57: 625-632, 1967.

Dohrenwend, B.P., and Dohrenwend, B.S. *Social Status and Psychological Disorder: A Causal Inquiry*. New York: John Wiley, 1969.

Fishman, D.B. Rorschach adaptive regression and change in psychotherapy. *Journal of Personality Assessment* 37: 218-224, 1973.

Fishman, D.B. *Development and Test of a Cost-Effectiveness Methodology for CMHCs* Final report of NIMH Contract No. HSM-42-73-162(OP), 1975*a*. Available from the National Technical Information Service, U.S. Dept. of Commerce, 5285 Fort Royal Road, Springfield, Va. 22151, as follows:

- *Volume I—Development and Testing of a Cost-Effectiveness Methodology for CMHCs, PB-246-676 ($9.25 per copy).*
- *Volume II—Exhibits for the Final Report: Development and Testing of a Cost-Effectiveness Methodology for CMHCs*, PB-246-677 ($7.75 per copy).
- *Appendix 1A—"COCE" Adult Interview for: Development and Testing of a Cost-Effectiveness Methodology for CMHCs*, PB-246-678 ($4.50).

Fishman, D.B. Development of a generic cost-effectiveness methodology for evaluating the patient services of a Community Mental Health Center. In: Zusman, J., and Wurster, C.R. eds. *Evaluation in Alcohol, Drug Abuse, and Mental Health Service Programs*, Lexington, Mass.: D.C. Heath, 1975*b*.

Fishman, D.B. "Scoring Manual for the C*O*C*E Adult Interview. Unpublished paper, Commerce City, Colo., 1975*c*.

Fishman, D.B., and Gordon, C.J. "The Adams County Interview." Unpublished paper, Commerce City, Colo., 1973.

Fishman, D.B., and Neigher, W.D. Mental health needs assessment: A conceptual and practical overview. In: Landsberg, D.; Neigher, W.D.; Hammer, R.; Windle, C.D.; and Woy, J.R., eds. *Evaluation in Practice: A Sourcebook of Program Evaluation studies from Mental Health Care Systems in the United States*. DHEW Pub. No. (ADM) 78-763., Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1979.

Foley, H.A. "Feasibility and Implications of Insurance for Mental Health." Paper presented at Butler Hospital of Brown University, Providence, R.I., June 7, 1975.

Kiresuk, T.J. Goal attainment scaling at a county mental health service. *Evaluation*, Special Monograph No. 1: 12-18, 1973.

Langsley, D.G.; Machotka, P.; and Flomenhaft, K. Avoiding mental hospital admission: A followup

study. *American Journal of Psychiatry* 127: 127-130, 1971.

Leighton, D.C.; Leighton, A.H.; and Armstrong, R.A. Community psychiatry a rural area: A social psychiatric approach. In: Bellak, L., ed. *Handbook of Community Psychiatry*. New York: Grune & Stratton, 1964.

Lynn, L.E. Organizing human services in Florida: *Evaluation* 3: 58-78, 1976.

Miller, L.C. Louisville Behavior Checklist for males, 6-12 of age, *Psychological Reports* 21:885-896, 1967.

Miller, L.C. Personal communication, 1972.

Miller, L.C. "Louisville Behavior Check List Manual—Form E2." Mimeographed paper, Louisville, Ky., 1975.

Miller, L.C.; Hampe, E.; Barrett, C.L; and Noble, H. Children's deviant behavior within the general population. *Journal of Consulting and Clinical Psychology* 37:16-22, 1971.

Miller, L.C.; Barrett, C.L.; Hampe, E.; and Noble, H. Comparison of reciprocal inhibition, psychotherapy, and waiting list control for phobic children, *Journal of Abnormal Psychology* 79:269-279, 1972*a*.

Miller, L.C.; Hampe, E.; Barrett, C.L.; and Noble, H. Test-retest reliability of parent ratings of children's deviant behavior. *Psychological Reports* 31:249-250, 1972*b*.

Morrill, W.A. Services integration and the Department of Health, Education, and Welfare. *Evaluation* 3: 53-55, 1976.

National Institute of Mental Health. *Cost-Finding and Rate-Setting for Community Mental Health Centers*, by Sorensen, J.E., and Phipps, D.W. DHEW Pub. No. (HSM)72-9138. Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1972.

National Institute of Mental Health. *Definition of Terms in Mental Health, Alcohol Abuse, Drug Abuse, and Mental Retardation*. DHEW Pub. No. (ADM)74-38. Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1974.

National Institute of Mental Health. *The Design of Management Information Systems for Mental Health Organizations: A Primer*, by Chapman, R.L. DHEW Pub. No. (ADM)76-333, Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1976.

National Institute of Mental Health. *Guidelines for a Minimum Statistical and Accounting System for Community Mental Health Centers*, by Cooper, E.M. DHEW Pub. No. (ADM)74-14, Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1973.

National Institute of Mental Health. *Integrated Management Information Systems for Community Mental Health Centers*, by Smith, T.S., and Sorensen, J.E. DHEW Pub. No. (ADM)75-165. Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1974.

National Institute of Mental Health. *Marital Status and Mental Disorder: An Analytical Review*, by Bachrach, L.L. DHEW Pub. No. (ADM)75-217. Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1975.

National Institute of Mental Health. *A Working Manual of Simple Program Evaluation Techniques for Community Mental Health Centers*, by Hagedorn, H.J.; Beck, K.J.; Neubert, S.F.; and Werlin, S.H. DHEW Pub. No. (ADM)76-404. Washington, D.C.: Supt. of Docs., U.S. Govt. Print. Off., 1976.

Rivlin, A.M. *Systematic Thinking for Social Action*, Washington, D.C.: The Brookings Institute, 1971.

Spitzer, R.L.; Endicott, J.; Fleiss, J.L.; and Cohen, J. The Psychiatric Status Schedule: A technique for evaluating psychopathology and impairment in role functioning. *Archives of General Psychiatry* 23: 41-55, 1970.

Srole, L.; Langner, T.S.; Michael, S.T.; Opler, M.K.; and Rennie, T.A. *Mental Health in the Metropolis*. New York: McGraw-Hill, 1964.

Sullivan, R. U.S. and State government test new ways to cut hospital costs. *New York Times*, February 27, 1978, p. 1.

Taube, C.A. "NIMH letter to directors of federally funded CMHCs concerning the 1973 CMHC profile package," Rockville, Md. May 27, 1975.

U.S. Congress. "Public Law 94-63, Title III: Community Mental Health Centers." Passed on July 29, 1975.

Warheit, G.J.; Holzer, C.E.; and Schwab, J.J. "An Analysis of Social Class and Racial Differences in Depressive Symptomatology: A Community Study." Paper presented at the Annual Convention of the Americal Sociological Association, 1972.

Warheit, G.J.; Schwab, J.J.; Holzer, C.E.; and Nadeau, S.E. "New Data From the South on Race, Sex, Age, and Mental Illness." Paper presented at the Annual Convention of the American Sociological Association, 1973.

Wiggins, J.S. Substantive dimensions of self-report in the MMPI item pool, *Psychological Monographs*, 80, Whole No. 630: 1-42, 1966.

Zuckerman, M., and Lubin, B. *Manual for the Multiple Affect Adjective Checklist*, Princeton, N.J.: Educational and Testing Service, 1965.

## TOPIC INDEX


Buyer's guide approach, 1, 3, 4, 14-18, 71

Change
  response to treatment, 13, 28, 31, 32, 53, 56, 70, 74
  scores, 4, 28, 29, 60, 61, 62. *See also* Functioning, Outcome.
Client
  characteristics at admission, 21, 25, 26, 28, 29-31, 70
  -oriented summary functioning, 21, 25, 28, 60
Community average functioning, 21, 26, 28, 54, 69
C*O*C*E (Cost-Outcome/Cost-Effectiveness) Adult Interview, 56-58, 60, 75
  interview schedule, 79-135
  subscales, 136-139
Consumer satisfaction, 28, 58
Contact services, 5-6, 20, 44, 49-52
Cost, 3, 11, 14, 39, 45, 47-52
Cost-benefit analysis, 11, 73-74
Cost effectiveness, 1, 3, 11, 14-15, 17, 20, 31-36, 39, 66, 69, 71, 73-76
Cost outcome, 14, 20, 26, 29, 31

D*A*R*E (Data for Accounting, Records, and Evaluation) System, 39-43, 70, 77-78
  client-outcome subsystem, 41, 53, 54
  statistical and financial subsystem, 41, 70
Decisionmaker
  information needs, 1, 14-18
  values, 21, 28, 29, 53, 58-60
Delivery of mental health care services, 5-6, 31-36, 44-45, 66, 71-72

Economy-oriented summary functioning, 21, 25, 28, 60
Evaluation, 5-11, 39, 71, 74-75

Followup, 13, 28-29, 32, 53, 75-76
Functioning, 25-26, 28-29, 39, 53, 57-60, 74
Funding, 65-66, 69

Goals
  administrative, 16
  services, 3, 5, 74

Health insurance, 15, 16, 66, 69
Human services concept, 66, 71

Improvement, 25, 26, 28-29
Incentives, 16, 35, 36, 69
Integration of results, 21, 25, 26, 28-29, 58, 137-139
Interpretation of data, 14, 20, 26, 32-36

Louisville Behavior Checklist (LBCL), 55-56, 58

MIS (Management Information System), 39, 41, 70, 77-78. *See also* D*A*R*E.
Monitoring study, 31-32, 33, 143

Needs assessment, 54-55, 66, 69

Outcome, 13, 14, 20, 25-28, 41, 53, 55, 56, 58, 65, 74, 140, 141
Overall effectiveness rating, 3, 11, 28
Organizational matrix, 39, 44, 52, 69

Percentile achievement score model, 16-17, 20, 21-31, 69
Performance criteria, 3, 6, 11, 15-16

Random assignment study, 31-32, 34-36, 143
Records, 39, 41, 77. *See also* D*A*R*E.

Sanctions. *See also* Percentile achievement score model.
Services. *See also* Contact services.
  intraorganizational support, 44-45
Storefront study, 31-32, 33, 143

Target groups, 5, 6, 15, 16, 29, 39, 74-75
  adult, 20-26
  child, 26-28
Team leaders summary functioning, 21, 25, 28, 60
Therapist performance, 33-36
Treatment
  contacts. *See also* Contact services.
  duration, 13, 75-76
  group similarity criteria, 32, 70, 74-75

Unit costs, 39, 44, 45, 47-52, 65

Weighting, 11, 21, 26, 28, 58-60




☆U.S. GOVERNMENT PRINTING OFFICE: 1981—341-166/6322

DEPARTMENT OF
HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE

ALCOHOL, DRUG ABUSE, AND
MENTAL HEALTH ADMINISTRATION
5600 FISHERS LANE
ROCKVILLE, MARYLAND 20857

OFFICIAL BUSINESS
Penalty for private use, $300

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF H.H.S.
HHS 396

THIRD CLASS
BULK RATE

U.S.MAIL

## NOTICE OF MAILING CHANGE

☐ Check here if you wish to discontinue receiving this type of publication.

☐ Check here if your address has changed and you wish to continue receiving this type of publication. (Be sure to furnish your complete address including zip code.)

Tear off cover with address label still affixed and send to:

Alcohol, Drug Abuse, and Mental Health Administration
Printing and Publications Management Branch
5600 Fishers Lane (Rm. 6C-02)
Rockville, Maryland 20857

DHHS Publication No. (ADM) 81-767
Printed 1981